ENGINEERING NEWS-RECORD

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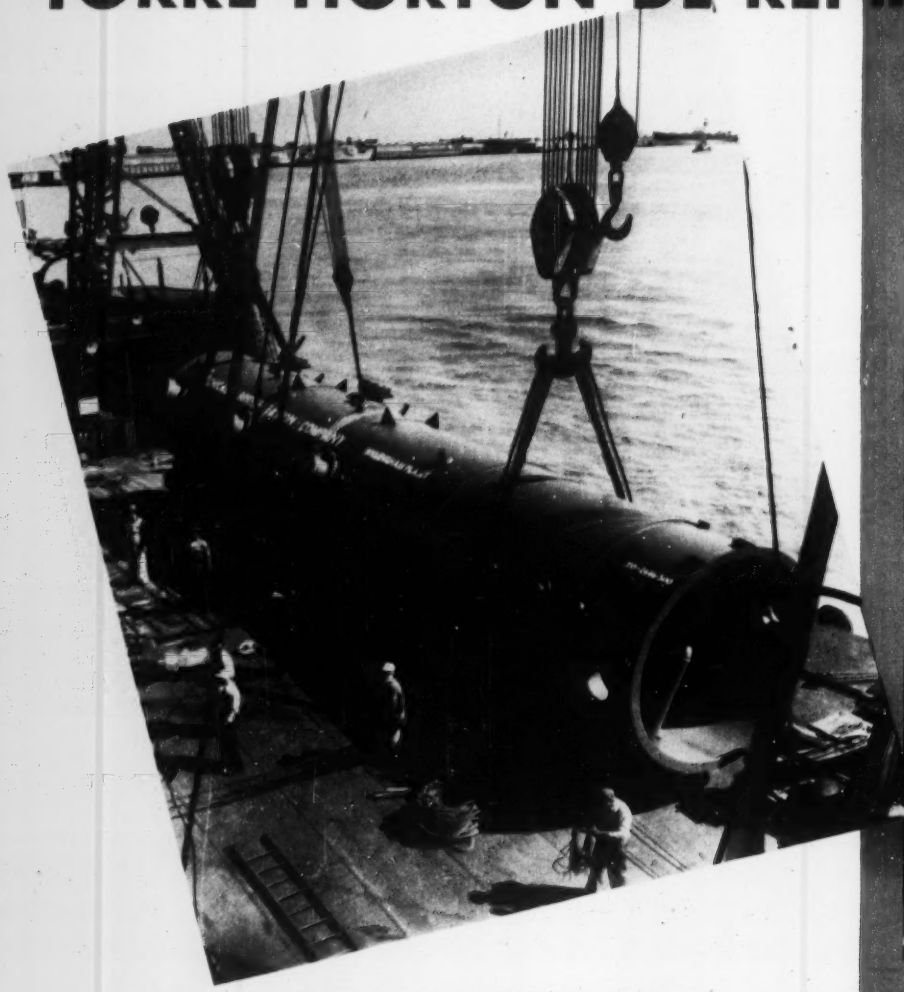
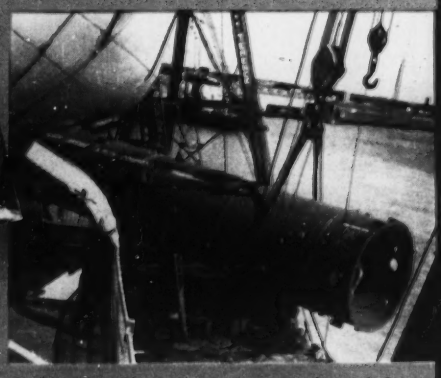
TORRE HORTON DE REFINERIA

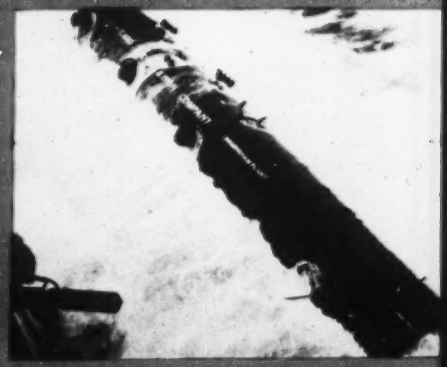


Too large to go into the hold, the refinery tower shown at the left was transported on the deck of the S. S. Alcoa Roamer.

Derrick barge used to transfer tower from New Orleans dock to deck of ship.



Loading the tower from the derrick barge to the deck of the S. S. Alcoa Roamer.



Upon arrival at its destination, the tower w "launched" into the water and towed asho

Enroute to South America

The accompanying illustrations show several views of a 10-ft. diam. by 53-ft. refinery tower which was built at our Birmingham, Alabama plant. It was transported by railroad to New Orleans, Louisiana and loaded on board the S. S. Alcoa Roamer for shipment to a refinery in South America.

Throughout the world, Horton refinery equipment is finding universal acceptance among petroleum men. Horton structures are rewarding this confidence by increasing production and providing greater efficiency of operation. Every installation is built by men with long experience in modern design, fabrication and erection methods.

Chicago Bridge & Iron Company also builds Horton Floating Roofs to prevent evaporation losses from tanks storing crude oil and gasoline—Hortondome Roofs to eliminate evaporation losses from flat-bottom tanks—Hortonspheres, Hortonspheroids and Hemispheroids for the pressure storage of volatile hydrocarbons—digesters for pulp and paper mills—Marx Savealls to recover suspended solids from waste water—Hortonspheres for storing gases under pressure—Horton surge tanks and penstocks for hydro-electric projects—and heavy steel plate work of all types.

Write our nearest office for information or quotations.

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Los Angeles, 17 ..... 1525 General Petroleum Bldg.
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Progress in Motor Grader Design

Allis-Chalmers new AD-40 shows importance of visibility. Operator can see front wheels — both ends of blade while he works.

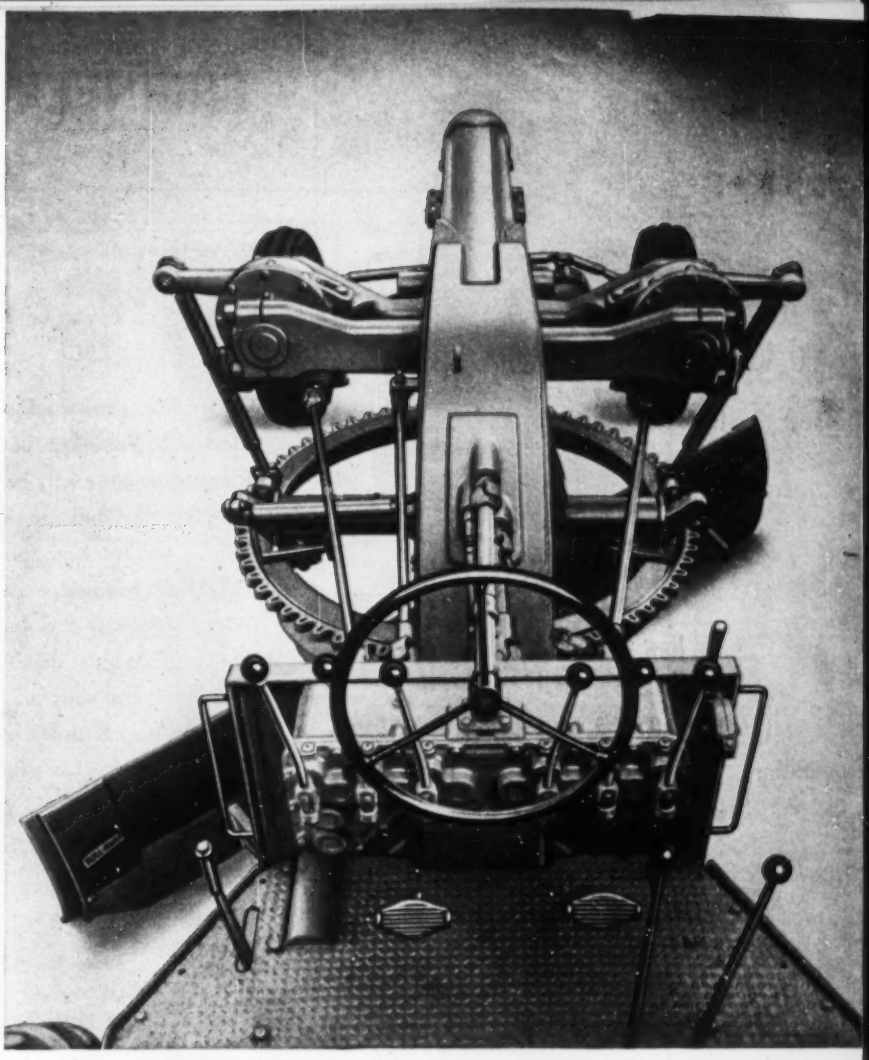
A MOTOR grader operator has to be able to *see* his work to do a good job, whether he's rolling big windrows or doing highly accurate finishing.

Here is how Allis-Chalmers engineers made sure the new AD-40 met these requirements. They carried A-C's single member frame all the way from the front axle to the platform; cut down the size of the lift cases to eliminate blind spots; lowered the control box and eliminated assemblies from the front panel to provide better visibility of the work area directly in front of the operator; tapered the front edges of the platform so that he could see both ends of the moldboard as he works.

A-C fieldmen also knew that a grader operator likes to sit down whenever the job permits. So they've not only given him ample leg room for stand-up operation but also a steering wheel of adjustable height and a seat that rolls forward at a touch for sit-down operation.

Combined with a new kind of power steering, these advanced design features are making Allis-Chalmers AD-40 an increasing favorite with operators and owners alike because it means more work done with less effort. For more facts on the AD-40, it will pay you to see your nearby Allis-Chalmers dealer soon.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



(above) Here is actual view operator has from platform of Allis-Chalmers AD-40, showing how well he can see both ends of the blade and both front wheels.

(below) The AD-40 has 104 brake horsepower, 23,000 pounds of weight and tandem drive traction, all it needs to do a better job on heavy duty construction . . . a faster job on maintenance.

English and Spanish Texts

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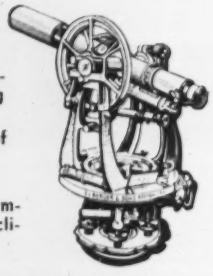

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ENGINEERING NEWS-RECORD

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Volume 150 January 8, 1953 No. 2

WALDO G. BOWMAN
Editor

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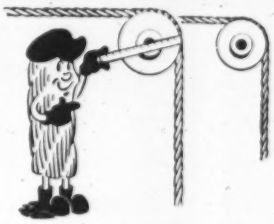
Shovel and Dragline Operators

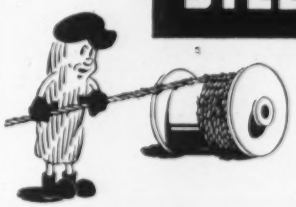
do you want to cut operating costs?

J&L STEEL

Here are a few tips on longer Wire Rope Service Life!



Avoid Small Drums and Sheaves

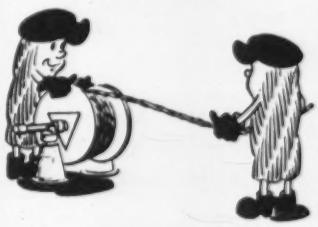


Keep Lines from Rubbing

Keep Drums and Sheaves Aligned

Check Your Sheave and Drum Grooves

Lubricate Your Lines Regularly



Use Jacks When Transferring Lines from Reel to Drum

SPECIFY J&L WIRE ROPES FOR YOUR EQUIPMENT

Proof of the value of any wire rope lies in its performance on the job. The unexcelled performance record of J&L Wire Ropes can be traced to J&L's *quality control* method of manufacture. *Quality control* that ensures the finest finished product by regulating every step in the manufacture of wire rope from the mining of iron ore to final stranding and closing operations. The result is wire rope that provides maximum service life—helps keep your operating costs to a minimum by cutting down time for re-rigging and making possible maximum production per wire rope dollar.

If you're not already using J&L wire rope, why not contact your nearest J&L representative *today*.

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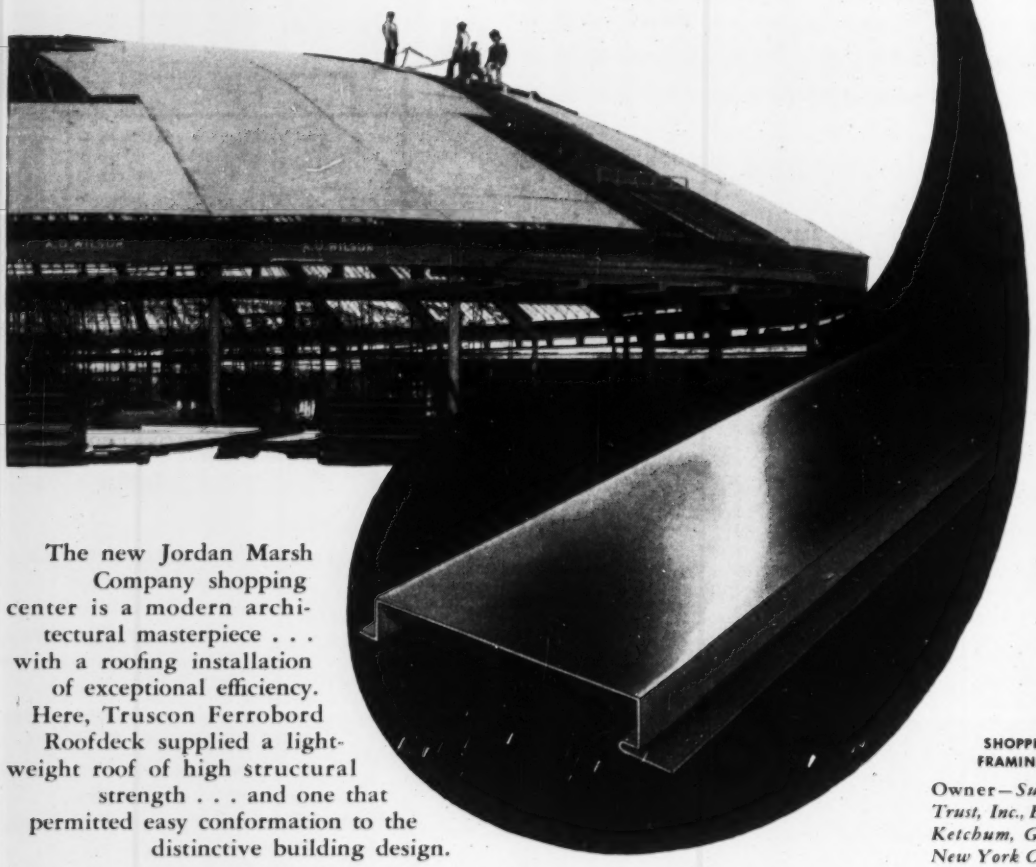

The new Jordan Marsh Company shopping center is a modern architectural masterpiece . . . with a roofing installation of exceptional efficiency. Here, Truscon Ferrobord Roofdeck supplied a lightweight roof of high structural strength . . . and one that permitted easy conformation to the distinctive building design.

SHOPPING CENTER, FRAMINGHAM, MASS.

Owner—*Suburban Centers Trust, Inc., Boston.* Architect: *Ketchum, Ginà and Sharp, New York City.* Contractor: *George B. H. Macomber Company. 140,000 Sq. Ft., 20 Gauge 1½" Truscon Ferrobor Steel Roofdeck.*

Truscon Ferrobord is adaptable to flat, pitched or curved roofs. The 6" wide units are so designed and formed that each firmly interlocks with the adjoining unit along the entire length, achieving the maximum in lateral distribution of concentrated loadings.

See SWEET's for complete details on Truscon Ferrobord Roofdeck; and write for detailed literature on all other Truscon Steel Building Products. Truscon® Steel Division, Republic Steel Corporation, 1064 Albert Street, Youngstown 1, Ohio.

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Euclid 15.5 cu. yd. Scraper hauls load out of wet, spongy borrow pit near East Pembroke.

Bottom-Dump "Euc" receives a heaping payload of 15 cu. yds. from a Euclid Loader in 40 seconds near Montezuma, N. Y.

"Eucs"

SPEED GRADING ON NEW YORK THRUWAY

Working near Schenectady, this "Euc" is dumping 15 tons of fill material.

Contractors working on the New York State Thruway depend on Euclids to get the job done on schedule. There are already about 135 "Eucs" on this 535-mile project, which requires the moving of approximately 80,000,000 cu. yds. of earth and rock. The Thruway is scheduled for completion in 1954.

All types of Euclid equipment—Scrapers, Bottom-Dumps, Rear-Dumps and Loaders—are speeding the grading on this job... hauling bigger loads, faster, and at low cost... providing dependable service at low maintenance cost under the toughest conditions.

Here, as on the building of many highways, dams, airports, levees, and other major earth moving jobs, you'll find the large capacity, high speed and job availability of "Eucs" paying off for owners.

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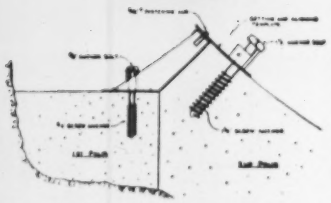
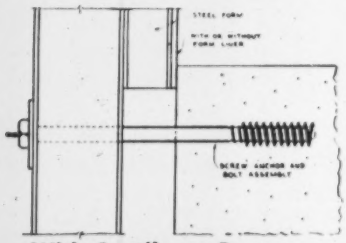
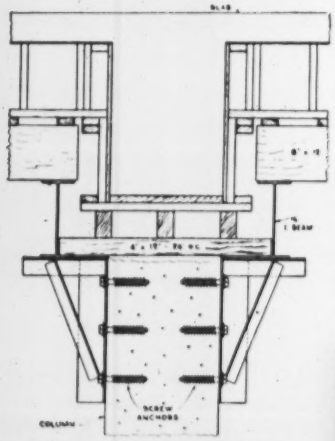


For Anchoring Tunnel Forms



With Cantilever Forms on Dam Construction



Supporting Temporary Brackets for False Work.

PROVIDE TEMPORARY OR PERMANENT SUPPORT

Providing a tight safe fastening invulnerable to shock and vibration, Superior Screw Anchors and Bolts are widely used in heavy concrete construction for *temporary* anchorage for steel tunnel forms, false work support brackets, cantilever steel forms for gravity dams and similar structures. Their use also permits convenient lifting of precast concrete slabs, beams and piles.

Easily assembled, Superior Screw Anchors and Bolts are ideal for numerous practical applications such as *permanent* anchors for cleats, fenders and other accessories to concrete structures.

Anchor bolts can be removed quickly with a wrench. No strength is lost by returning the bolt to the anchor. The full bearing of the coarse bolt thread is on the firmly imbedded anchor which provides steel bearing for the thread.

Superior Screw Anchors are available for ⅜" to 1¼" bolts.

Remember—when you use SUPERIOR you are assured of the *best* in design, material, and workmanship. Request a copy of our new Catalog 500—it contains a valuable table for spacing studs, wales, and form ties.

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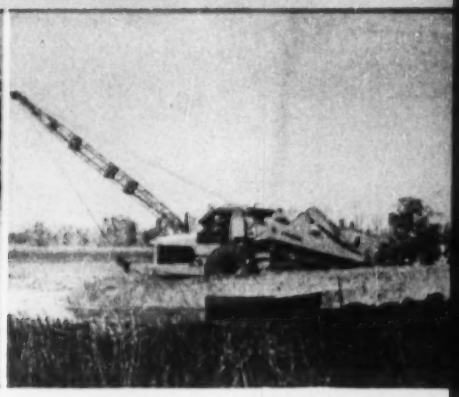
Here's what OWNERS say

after checking performance records of their high-speed C Tournapulls

"My C Tournapulls move dirt cheaper than my tractor-scrapers on hauls of any length," reports VERNIE JARL, Oregon owner of 4 of these electric-control rigs. On 4000' cycles on Portland Airport job, each "C" delivered 8 loads (88 pay yds.) of clay hourly. Over 1100' cycles, on road job near Tillamook, each "C" moved 16 loads (176 pay yds.) of clay hourly.

"C Roadsters are all you claim . . . best dirtmovers I've ever had . . . and I've built a lot of roads in this sand country," says CLAUDE WYLIE, Albuquerque, after working his 2 rubber-tired C Tournapulls in sand and sandy clay on 4 highway jobs in southeastern New Mexico. In all, Wylie's 2 "C's" rebuilt over 70 miles of city, state, and federal highways in 1 year.



"Best dirtmoving tool on the market. It will handle sand or clay where crawlers cannot be economically used," says J. R. HERNDON, president of Currahee Const. Co., Georgia. *"On this 400,000-yd. road job, our three 'C's', on 2400' cycle, hauling 10 pay yds. of sand each trip, were so fast they had to wait for Pusher."* Units, moved 1500 pay yds. per 10-hour day.

"Tournapulls really pulled us out of a hole on a couple of jobs. They work efficiently and economically on any length haul . . . they're wonderful machines," says ARNOLD HAAGENSON, McIntosh, Minnesota, user of LeTourneau scrapers since 1936. Haagenson reports he never ships the 3 "C's" . . . in one year, drove them 1,945 mi. over main highways between jobs.

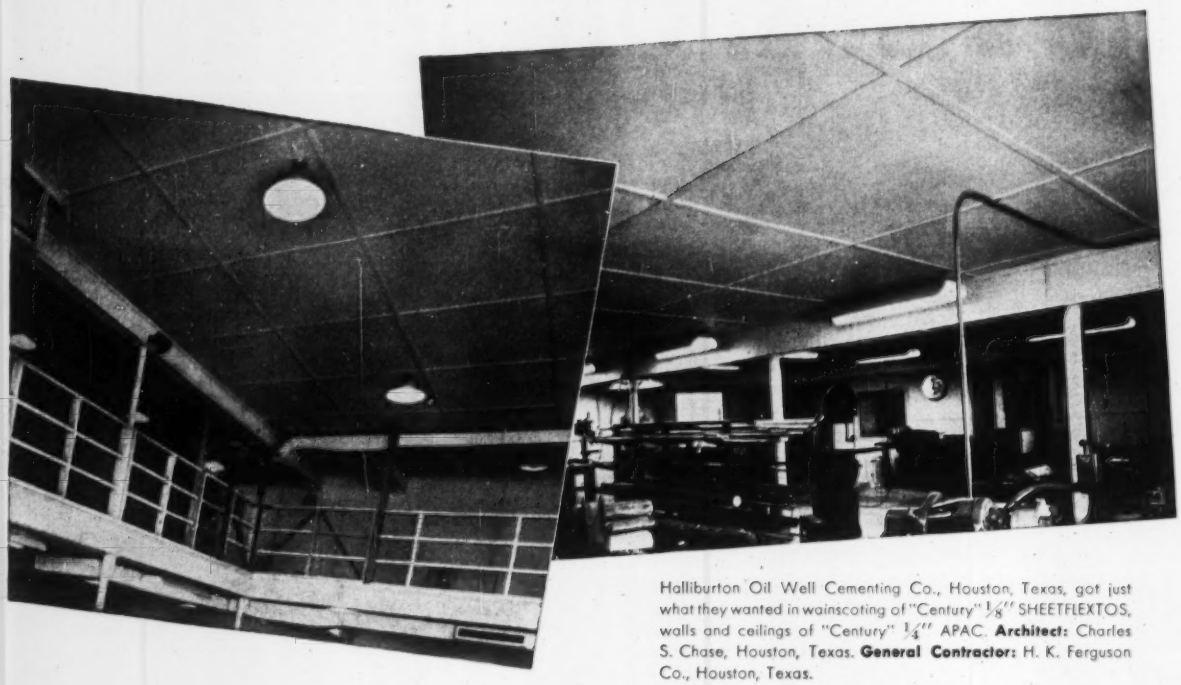
"Since 1949 we have not used any crawler to move dirt. We do the complete job on highway work with our C Tournapulls. They beat crawler-scraper combinations on either long or short hauls . . . work any place a crawler-scraper will . . . even do finishing work on slopes and grades." That's what Albany (Minn.) Contractor W. H. BLATTNER says about his 5 "C's"

"Performance is perfect and maintenance is normal compared to the amount of work accomplished as against other types of dirt-moving equipment. The service furnished by LeTourneau Dealers is all any contractor could ask for," writes Michigan Contractor JOHN F. WALSER, whose 2 "C's" have each worked 8000 hrs. with 90% mechanical efficiency!

For complete details on these jobs, or for additional facts on C Tournapull, see your LeTourneau Distributor.

R. G. LeTOURNEAU, INC.

Peoria, Illinois



Halliburton Oil Well Cementing Co., Houston, Texas, got just what they wanted in wainscoting of "Century" 1/8" SHEETFLEXTOS, walls and ceilings of "Century" 1/4" APAC. **Architect:** Charles S. Chase, Houston, Texas. **General Contractor:** H. K. Ferguson Co., Houston, Texas.

Walls without worries

. . . ceiling without overhead

with **"CENTURY"**

ASBESTOS-CEMENT SHEETS

Halliburton Oil Well Cementing Co. wanted strong, good-looking walls and ceilings that would be *fire-resistant* and *easy to clean*. That's why they chose "Century" SHEETFLEXTOS for wainscoting applied over solid sheathing and "Century" APAC secured right to studs and joists for upper walls and ceilings.

Fire-resistance, of course, is an outstanding feature of these structural boards, combined as they are of virtually indestructible asbestos fiber and portland cement. Ease of cleaning, too, comes "naturally" to their hard, smoothly-textured surfaces that can't be hurt by water, dampness, or rot, and need no protective painting.

But look at the *extra* features that go with "Century" APAC and SHEETFLEXTOS. Both Sheets are also resistant to rodents, immune to termites. They go on fast, in big sheets (standard 4′ x 8′) that can be cut or drilled on the job, and fastened easily with screws or ring-fettered nails. They obviate the need for laths and plaster, and, while they require no painting at all, they take decorative colors well. SHEETFLEXTOS, as its name implies, has the added advantage of flexibility, to make curves and domes where indicated.

Both "Century" APAC and "Century" SHEETFLEXTOS make good surroundings for successful work and enjoyable living. Figure on one or both for your attractive, fire-resistant interiors. Write us for further details about these economical products . . . and name of your nearest distributor.

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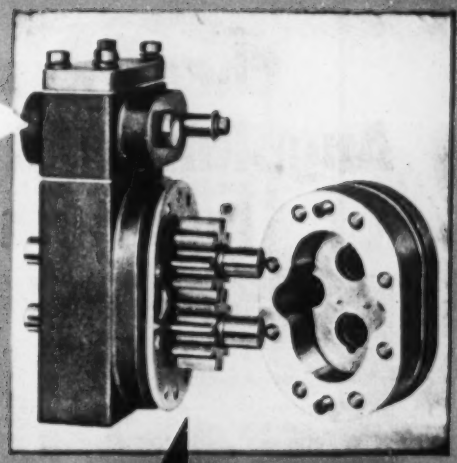

MAKES A BIG DIFFERENCE *HERE!*

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A NEW CONCEPT of DUMP TRUCK PERFORMANCE from Gar Wood

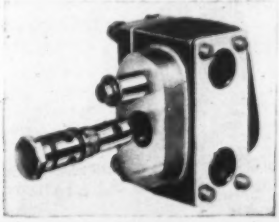
Now, from Gar Wood, here's a complete new line of advance-engineered, precision built hydraulic pumps destined to bring Gar Wood owners a brand new concept of heavy-duty hydraulic hoist performance . . . pumps designed and field tested for levels of hydraulic efficiency never before achieved by any manufacturer.

Gar Wood's new three-piece pump housing design eliminates gear alignment problems inherent in other pumps having counterbored gear shaft mountings. Closer tolerances can be held in production . . . results in precision manufacture and assembly never before possible . . . assures longer life and greatly improved performance in actual field service. New 10-tooth pump gears have larger, stronger teeth with gear width and diameter scientifically calculated to provide increased oil flow at all speeds. Increased pump output assures fast, positive hoist action with instant response to hoist controls for most efficient dumping of heavy loads.

Gear shaft sizes have been increased to provide greater strength and more rigid gear mounting . . . shafts cannot deflect under heavy loads to cause improper meshing of gears. Tooth contact is positive under all load conditions—spalling and premature wear from incorrect alignment are eliminated. Shafts are mounted in large needle roller bearings with increased load capacity for long life and quiet operation. Precision machined aluminum wear plates prevent side play in gears—eliminate scuffing and resultant gear failure. Special alloy steel bolts hold pump assembly permanently rigid . . . assure permanent, positive alignment. Alloy steel bolts cannot stretch to permit oil leakage and thus impair hydraulic efficiency. Field service is simplified too, since all housing faces are mirror-finished to permit leakproof assembly *without gaskets* . . . no hand fitting of parts is required.

For profits' sake, investigate heavy-duty Gar Wood hoists featuring the new line of Gar Wood hydraulic pumps. A complete line of heavy-duty pump sizes and capacities assures the right pump for every heavy-duty Gar Wood hoist—and you'll discover a new level of hydraulic efficiency and heavy-duty hoist performance never before available to truck owners and operators. See your local Gar Wood Distributor or use the coupon below to obtain full information.

New, precision built, balanced spool valve ends creeping . . . permits positive positioning of dump body by cab control without binding. Valve mounts on either end of pump for simple conversion to right or left hand drive. One-piece "unit" construction of ball check assembly permits easy inspection and replacement when necessary.



Customer Service Department, 3A114
GAR WOOD INDUSTRIES, Inc.,
36008 Main St., Wayne, Michigan

Please send me complete information on the new line of Gar Wood Hydraulic Pumps for heavy-duty service.

Name and Title_____

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Model No. 7014 with "A" standard. "U" type also available.
$575.00* complete with tripod, case and field equipment.

Yet this improved White instrument costs you less than any other quality engineers' transit

NOT only does David White calibrate the graduations on its Engineers' Transit within less than one second. But that accuracy is yours for years and years! Reason: a new Swiss dividing engine of the latest design cuts the graduations into *solid silver*.

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See your dealer for full information on the complete David White line of Transits, Universal Level-Transits, Levels, Theodolites and engineering supplies. Or write for new Bulletin 1052 to DAVID WHITE COMPANY, 315 W. Court Street, Milwaukee 12, Wisconsin.

*Price subject to change without notice.

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We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

7241

READER COMMENT

Forecast corrected

Sir: For the benefit of the readers of ENGINEERING NEWS-RECORD we would like to call attention to several errors in the article on the outlook for new construction in 1953 (ENR Dec. 4, p. 21), based upon a joint release of the Depts. of Commerce and Labor.

1. The total figure for new construction in 1953 appearing in the heading and in the first paragraph should be changed to agree with that shown in the table—$33½ billion.

2. The percent changes shown in the table for public residential, public hospital and institutional buildings, and miscellaneous public service enterprises should be minus instead of plus. The sixth paragraph of the text should be changed accordingly.

3. The reference to public hospitals and institutions in the sixth paragraph should read "decrease of 22 percent from 1952" instead of "up 11 percent."

BRUCE M. FOWLER
Acting Chief
Production & Requirements Branch
Building Materials Division

Wrong architect

Sir: In the article, New Certain-teed Products Building (ENR Nov. 20, 1952, p. 41), I am erroneously mentioned as the architect. Although I am a registered architect, I drew up only the preliminary requirements on this job and served in the capacity of a consultant. The credit for the design of the building must go to architect O. Kline Fulmer, associated with the general contractor, Lewis C. Bowers & Sons, Inc., Princeton, N. J.

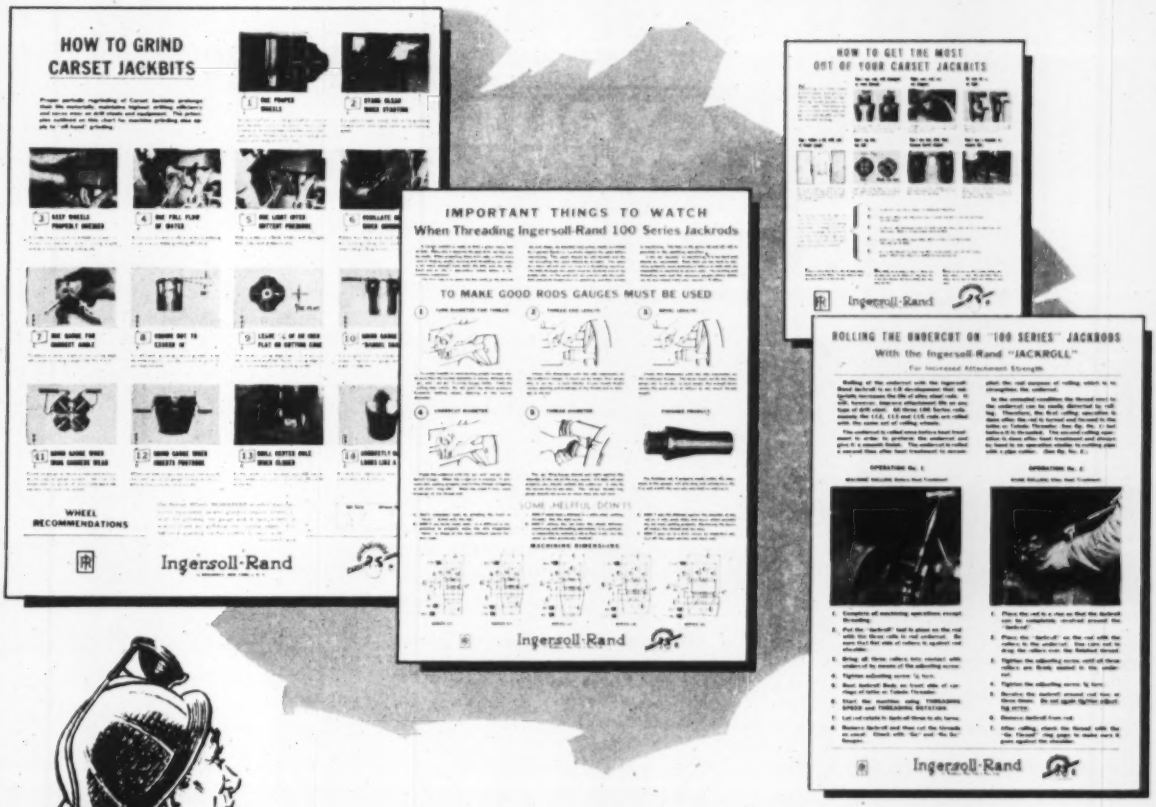
J. C. VAN BALEN
Certain-Teed Products Corporation
Paoli, Pa.

Lime and fly-ash in roads

Sir: We noticed an editorial in your issue of Oct. 23, p. 128 dealing with the subject of fly-ash. We wish to draw your attention to the fact that there has been an extensive research study progressing in this country which has extended for a period of over ten years which has recently been directed to the use of lime and fly-ash with soil and aggregate mixtures for highway construction. One of the first published articles on this appeared in CONTRACTORS AND ENGINEERS MONTHLY for April, 1951.

There have been a number of roads

(*Continued on page 14*)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IMPORTANT THINGS TO WATCH
When Threading Ingersoll-Rand 100 Series Jackrods
TO MAKE GOOD RODS GAUGES MUST BE USED
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** To get maximum drilling speed and longest bit life you should use Ingersoll-Rand Carset Jackbits as indicated on these charts.*

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Please send me, free of charge, the wall charts checked below:

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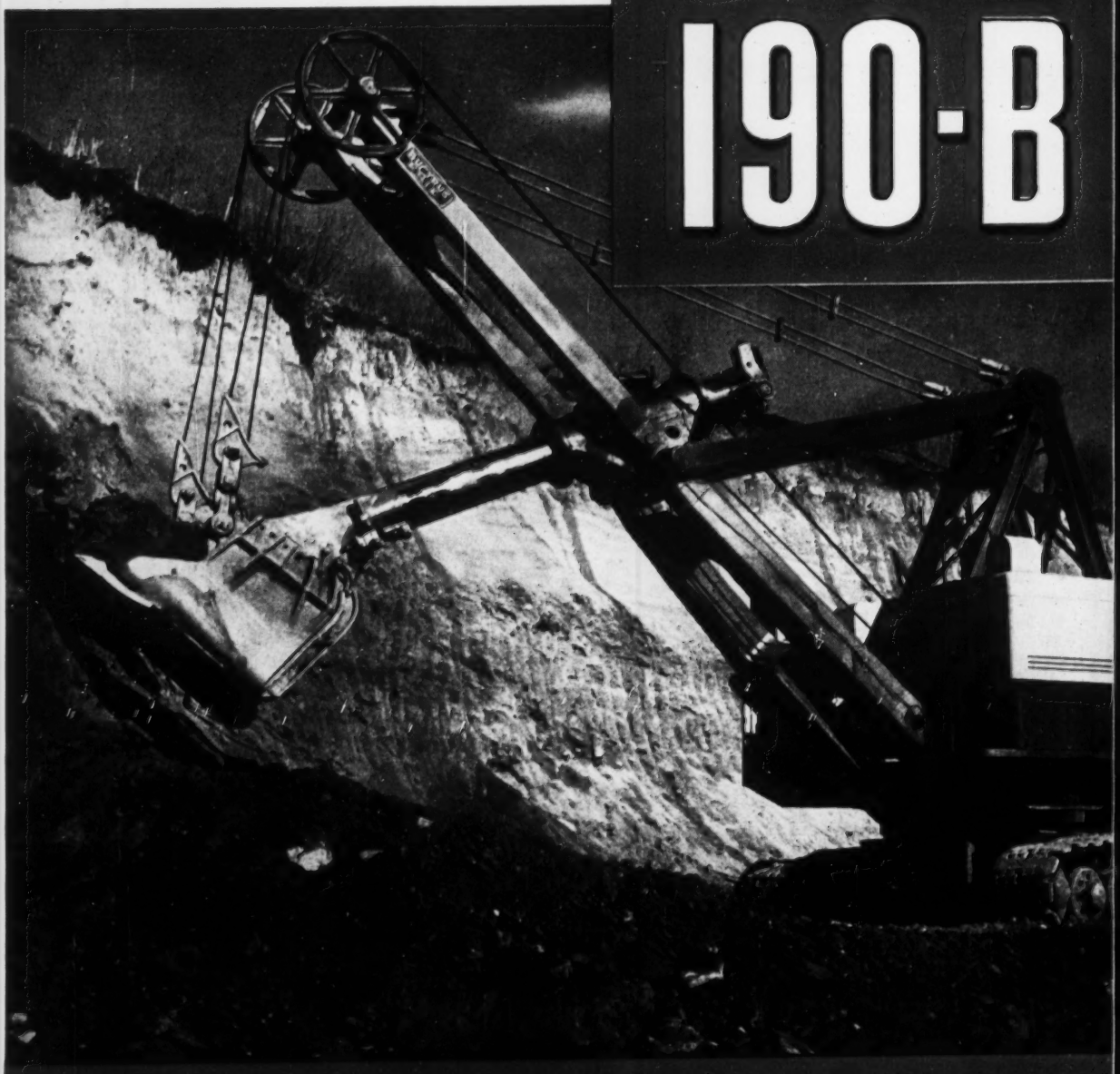
BUCYRUS ERIE

8-yard

190-B



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for mines and quarries

The new 190-B follows the tradition of Bucyrus-Erie leadership in producing high quality excavators capable of delivering consistently big output at lowest possible cost per cubic yard. This 8-cubic yard shovel and dragline offers you many outstanding features — features that add up to greater capacity, higher output, and faster, smoother, more economical operation. Among these outstanding features are:

EXCLUSIVE TWO-SECTION BOOM

reduces shovel front-end weight, increases swing speed and payload capacity, yet provides ample strength for tough digging.

POWERFUL, MAIN MACHINERY

designed for double twin hoist, delivers power surely, smoothly, efficiently.

LARGER, STRONGER MOUNTING

provides ample strength for heavy duty and protective features for minimizing wear.

The 190-B has full Ward Leonard improved rotating control, is readily convertible to dragline service, and has numerous other outstanding features to meet the particular demands of your toughest jobs.

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Owens . . . are FAMOUS for "FIRSTS"

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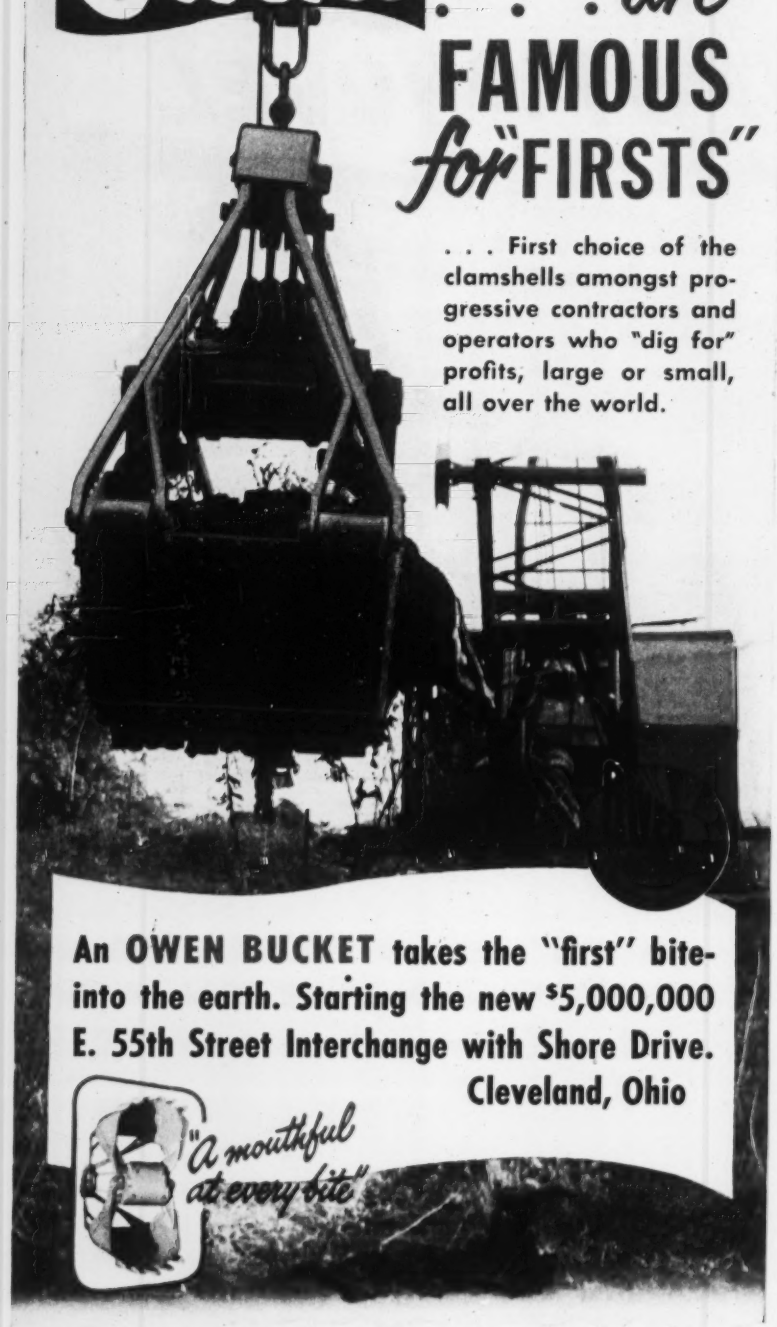

An OWEN BUCKET takes the "first" bite into the earth. Starting the new $5,000,000 E. 55th Street Interchange with Shore Drive. Cleveland, Ohio

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THE OWEN BUCKET CO.

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READER COMMENT

constructed using this method of stabilization in the states of Maryland, Pennsylvania, and New Jersey. During the summer the lime-fly-ash treatment was used successfully on the shoulders of several of the New Jersey Turnpike interchanges.

The current issue of the Proceedings of the Highway Research Board contains a paper on this subject covering laboratory and field investigations on several lime-fly-ash-aggregate compositions and also lime-fly-ash-soil mixtures, both fine grained and coarse grained. Reference is made in this paper to a field project on Route 322 in New Jersey which showed exceptionally good results for this type of stabilization.

L. JOHN MINNICK
Chief Chemist
G. & W. H. Carson, Inc.
Plymouth Meeting, Pa.

CALENDAR

National Constructors Assn., Hotel Commodore, N. Y. City, Jan. 13-15.

Highway Research Board, annual meeting, National Research Council Bldg., Washington, D. C., Jan. 14-16.

American Society of Photogrammetry, annual meeting, Shoreham Hotel, Washington, D. C., Jan. 14-16.

National Association of Home Builders, Conrad Hilton Hotel, Chicago, Ill., Jan. 18-22.

American Society of Landscape Architects, annual meeting, Ansley Hotel, Atlanta, Ga., Jan. 26-28.

Association of Asphalt Paving Technologists, Rice Hotel, Houston, Tex., Jan. 26-28.

Associated Equipment Distributors, annual convention, Conrad Hilton Hotel, Chicago, Ill., Feb. 1-5.

Mason Contractors Association of America, Sherman Hotel, Chicago, Ill., Feb. 1-4.

California Street and Highway Conference, University of California, Berkeley, Feb. 4-6.

American Road Builders Association, Hotel Statler, Boston, Mass., Feb. 9-11.

American Concrete Institute, annual convention, Statler Hotel, Boston, Mass., Feb. 17-19.

Interamerican Congress of Municipalities, Montevideo, Uruguay, Feb. 20-28.

Ohio Water Clinic, Ohio State University, Columbus, Feb. 19-20.

Illinois Conference on Highway Engineering, Urbana, Feb. 24-26.

Industry conference on air pollution abatement, Hotel Statler, Detroit, Mich., Feb. 26-27.

American Concrete Pipe Association, annual convention, Baker Hotel, Dallas, Tex., Feb. 26-28.

American Concrete Pressure Pipe Assn., annual convention, Baker Hotel, Dallas, Tex., Feb. 25.

American Concrete Agricultural Pipe Assn., annual convention, Baker Hotel, Dallas, Tex., Feb. 26.

CLEVELAND—E. 89th St. Built in 1914. Photos 1920, 1952.

BELLEFONTAINE—Williams Rd. Built 1920-21. Photos '25, '52.

Here today—

and still here tomorrow

that's the story of Ohio's *CONCRETE* streets

All through Ohio you see old concrete streets like those pictured here. Many have served more than a quarter of a century. Some show the scars of long, hard use but are still good for years.

Such durable, dependable, ***low-annual-cost*** service is typical of concrete pavement. And today, due to improved design, materials and construction methods, concrete pavements can be built even better.

Concrete also is the safety pavement. Its gritty surface is naturally skid-resistant, facilitating quick stops, wet or dry. Its light color aids visibility at night. Its freedom from ruts and chuck holes permits better control over vehicles.

For help in designing and building concrete roads and streets carrying all classes of traffic on subgrades of different characteristics write for a free copy of "*Concrete Pavement Design*," a 92-page manual. It is distributed only in U.S. and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A1b-17, 33 West Grand Avenue, Chicago 10, Illinois

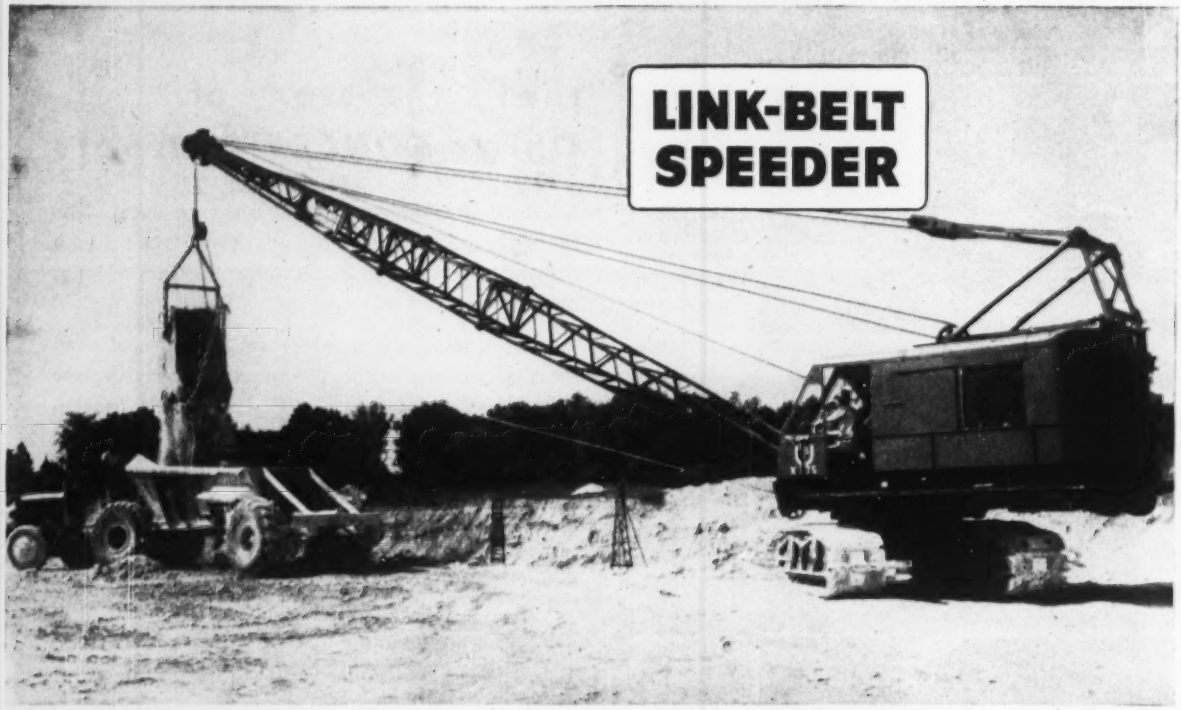
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

LORAIN—Park Ave. Built 1923. Photos taken 1923, 1952.

FAIRVIEW PARK—W. 212th St. Built in 1928. Photos '28, '52.

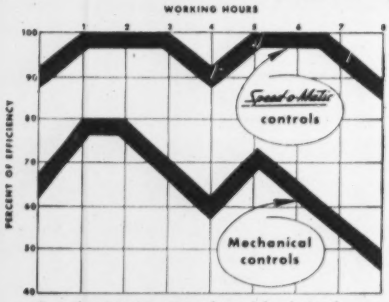
Before you buy:

CHECK EARNING POWER!



POLK CONSTRUCTION CO., Lakeland, Fla., reports they are "extremely pleased" with performance of this K-375, quarrying limerock.

Speed-o-Matic controls pay off in greater output and lower maintenance



Speed-o-Matic controls, with their finger-tip operated levers, are responsible for the above startling evidence of how operator fatigue can be reduced.

Link-Belt Speeder's power-driven hydraulic controls reduce operator fatigue, minimize wear and tear on the machine and require far less maintenance than rigs with manual, air, vacuum or other control systems.

On tough rock jobs or ticklish steel erection—Speed-o-Matic control provides fast, safe, accurate, "feel the load" response—helps you do more work in less time at lower cost.

For details on the complete line of crawler, truck or wheel-mounted shovel-cranes . . . all their matchless output-boosting, cost-cutting advantages, ask your distributor or write for Catalog 2373.

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BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

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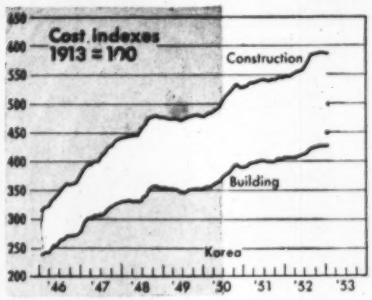
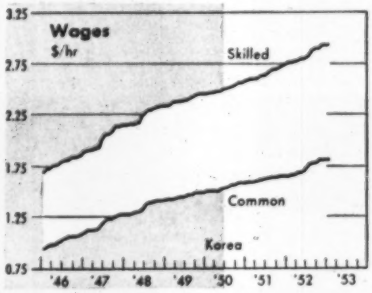
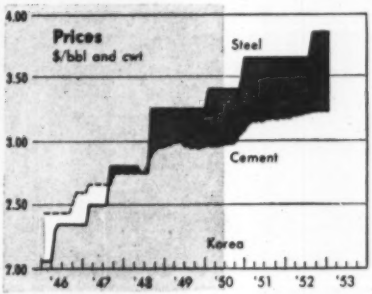
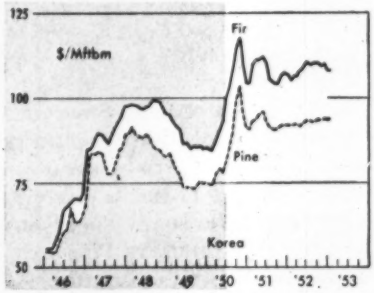
JANUARY CONSTRUCTION SCOREBOARD









ENR INDEXES (1913=100), 20-cities' average	1953 January	% Change from last Month	% Change from last Year
Construction Cost	587.27	−0.03	+7.2
Building Cost*	425.04	+0.02	+4.7

* Dec. Revised 424.92.

WAGE RATES, 20-cities' average			
Common	$1.817	0.0	+9.8
Skilled (aver. 3 trades)*	2.942	+0.2	+6.6
Bricklayers	3.267	+0.1	+6.2
Structural Ironworkers	2.867	+0.1	+6.3
Carpenters*	2.692	+0.2	+7.4

* Dec. Revised Skilled 2.937 Carpenters 2.687

MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.219	0.0	+1.4
Structural Steel, (3-mill aver.), per cwt	3.850	0.0	+5.5
Sand, per ton	2.120	+0.5	+0.9
Lumber, 2x4 Fir, per M. ft. bm	107.097	−0.6	+1.4
Lumber, 2x4 Pine, per M. ft. bm	93.200	+0.2	+1.7
Common brick, per M	31.606	+0.01	+1.6
Ready-mixed concrete, per c. y	11.388	+0.2	+3.5
Structural Clay Tile, 3x12x12 per M	154.388	+0.3	+1.2

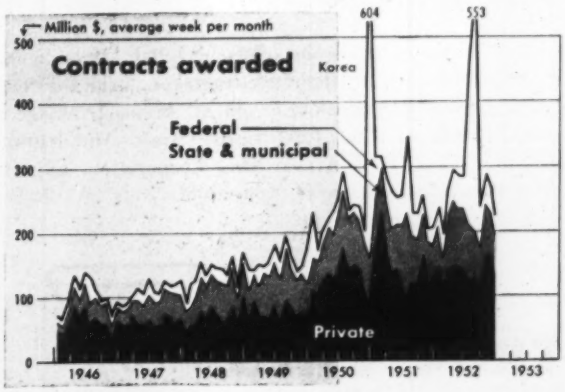
CONTRACTS AWARDED (Millions)	1952 Dec.	1952 12-Mos.	% Change from '51 Dec.	% Change from '51 12-Mos.
Total U. S. (ENR reported)	$906.9	$15,689.2	+ 9.3	+ 15.3
Private	530.2	7,112.6	+ 5.6	− 4.4
Public	376.7	8,576.6	+15.2	+ 39.1
Federal	130.3	4,501.0	+22.4	+100.4
ENR Volume Index, '13 = 100	421	577	+ 4.2	+ 10.5

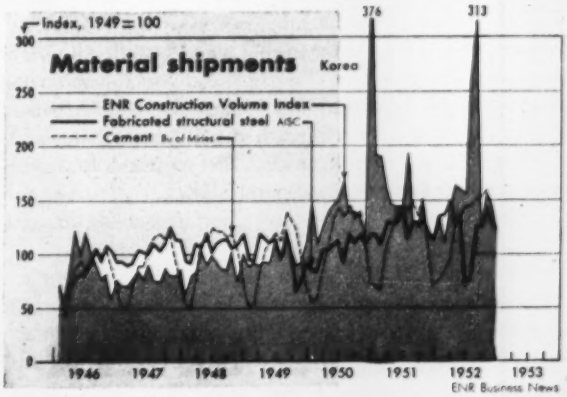
NEW CAPITAL (Millions)				
Total	501.6	15,151.1	−54.9	− 10.1
State & Municipal Bond Sales*	333.8	3,092.9	+64.8	+ 24.1
Corporate Security Sales	158.0	3,577.6	−81.9	− 12.4
Federal (non-federal work)	9.8	893.8	−71.7	+ 21.9
Federal (federal work)	——	7,586.8	——	− 20.4

* Excluding public housing.

MATERIAL SHIPMENTS & LABOR SUPPLY (Millions)	1952 Oct.(O) Nov.(N)	1952 10-Mos. 11-Mos.	% Change from '51 Mo.	% Change from '51 Yr.-Cum.
Cement bbls, Bu. of Mines	27.222(O)	217.625(10)	+4.1	+2.9
Fabr. Struc. Steel, tons AISC	0.222(N)	2.437(11)	+0.9	−2.5
Lumber, mil. ft. bm., NLMA	3.497(O)	31.413(10)	+2.5	−1.6
Lumber Prod., mil. ft. bm., NLMA	3.528(O)	31.739(10)	+0.4	−5.0
Contract Constr. Employ., BLS	2.586(N)	2.552(11)†	−1.8	−0.8

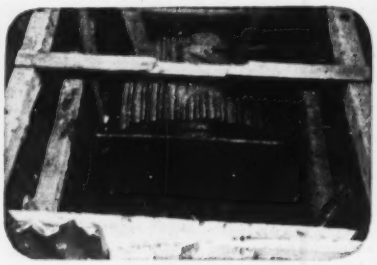
† Average.



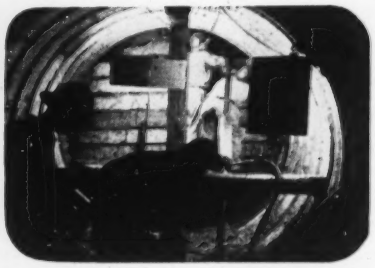


THIS SEWER DIDN'T STOP AT

Threading Armco ASBESTOS-BONDED Pipe through Conduit.



Shaft at start of tunnel.



Building Tunnel. Jack projects poling plates.

How would you put a new municipal sewer under a main-line railroad? This midwestern job is typical of how many cities do the work — without slowing down trains or sewer installation.

First, they dug a shaft near the tracks. Then they tunneled under the railroad with Armco Liner Plates. It was easy to add successive rings because one workman could carry, hold and bolt an Armco liner section into place using only standard tools. Job costs were low. Equally important, the corrugated Armco Liner Plates assured a strong, safe structure.

Next step was to thread the 96-inch diameter Armco ASBESTOS-BONDED Sewer through the 108-inch diameter conduit with a block and tackle. The project was completed quickly, easily and economically.

There is an efficient, economical Armco Structure to meet every sewer construction need. Consider plain galvanized pipe for normal conditions, PAVED-INVERT to combat erosion and ASBESTOS-BONDED to handle severe corrosion. Armco MULTI-PLATE makes sturdy, large waterways and either standard or MULTI-PLATE Pipe-Arch is ideal under limited headroom. Useful construction tools include Armco Liner Plate and flange or interlocking sheeting.

Both engineers and contractors find that Armco Sewer Structures have many definite advantages. Write for complete data on your specific problem. Armco Drainage & Metal Products, Inc., 1253 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO SEWER STRUCTURES

ARMCO

THE CONSTRUCTION WEEK

• **And still, predictions**—The New Year had gotten under way, the new Congress was organized and in session, the new Administration about to get to work. But the New Year predictions were still coming. You could take your choice:

• Said the Associated General Contractors (agreeing with practically everyone else): Outlay for new construction for 1953 will be $33.5 billion; outlay for maintenance and repair will total another $10.5 billion.

• Said the Defense Production Administration: Only 11 materials—few of which are of much direct interest to construction—remain on the "most critical" list (there were 24 at the end of 1951). Among the items dropped from the list were steel plates, and steel structural shapes.

• Said the American Institute of Steel Construction: Producers of fabricated structural steel will show a substantial increase in shipments from their plants over the 2,615,000 tons shipped in 1951. (AISC coupled its statement with a speech by its president, John E. Jackson, urging further easing of structural steel restrictions.)

• Said the National Savings and Loan League: Savings will rise even above the record of 1952 ($2.35 billion in the first 10 months)—there'll be plenty of money available to finance new construction, among other things.

• **Highways up first**—One of the first things to hit the congressional limelight will be a bill calling for 100,000 miles of multi-lane, federally financed, toll highways—built to the pattern of existing major state-built turnpikes.

Sponsor is Rep. John Dingell, Michigan Democrat, who figures U. S. citizens are willing to pay extra for speed and the convenience of turnpike-type toll roads. With the added angle of putting the roads where they can be used for military and defense purposes, Dingell figures he can get it, by-passing traditional congressional opposition to tolls on the federal road system.

• **EJC to expand**—Two years of effort to get greater unity in the engineering profession began to bear fruit this week:

Invitations went out to seven societies, asking them to join the Engineers' Joint Council—to make EJC in fact a top organization for the profession as a whole. If they join, EJC would speak for nearly 200,000 professionals.

Asked to join are: American Society of Heating and Ventilating Engineers, the Institute of Aeronautical Sciences, the Institute of Radio Engineers, the National Society of Professional Engineers, and the Society of Naval Architects and Marine Engineers.

Four of the five present EJC member societies (American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Institute of Mining and Metallurgical Engineers, and the American Institute of Chemical Engineers) have approved a revision of the constitution to include any or all of the societies asked to join. An organizational meeting of the reconstituted EJC is set for Jan. 23, in New York.

• **Another seaway try**—There's no doubt that the new Congress will see new attempts to get the U. S. into the St. Lawrence Seaway, positively.

Newest try is under the wing of Senator Alexander Wiley, who thinks he has the right approach: Divorce the seaway from the power aspects.

Wiley's reasoning: Let New York State and Ontario build the power features. Then create a government corporation, in which the U. S. would invest $100 million or so, to participate in seaway construction.

• **Kicker—mild variety**—There's a mild kicker in the swan-song report of the Office of Defense Management's final report, issued last week: Among the suggestions mildly made (to keep the U. S. ready for mobilization) is one that the government should have authority to build certain manufacturing plants. Nobody expects the recommendation to get far with the new Congress.

Mr. Highway Engineer...

See for yourself how

RUBBER ROADS are stretching Highway Dollars!

You've heard about rubber roads. . . . You've read about rubber roads. Now you can see for yourself the up-to-the-minute story of this newest development in paving.

The Natural Rubber Bureau is offering for free showings its new motion picture "STRETCHING HIGHWAY DOLLARS WITH RUBBER ROADS." If you are a highway engineer, a public official, or are in any way concerned with building and maintaining roads, you won't want to miss the opportunity of seeing this movie. This 16 mm., 30-minute sound film shows actual test roads of natural rubber and asphalt in different parts of the country, it presents the opinions of the highway engineers who laid them, and it describes the work of the Natural Rubber Bureau Research Laboratory, at Rosslyn, Virginia. It is the most complete presentation of the rubber road story to date.

You can arrange to obtain this film by simply filling out the coupon below and mailing it to the

WRITE FOR AN EARLY SHOWING OF THIS *NEW* FILM

NATURAL RUBBER BUREAU
1631 K Street, N. W., Washington 6, D. C.

I would like to receive your film "STRETCHING HIGHWAY DOLLARS WITH RUBBER ROADS" for a free showing on.....(date).

Name.....

Title.....

Dept.....

Address.....

City.....State.....

Natural Rubber Bureau

1631 K STREET, N.W., WASHINGTON 6, D.C.

Natural Rubber Bureau Research Laboratory
Rosslyn, Virginia

New Congress to scrutinize federal construction plans

- **More money expected for defense installations**
- **Funds for federal power, public housing face cuts**

Washington staff report

The GOP Congress that met last week isn't likely to dig its spurs into the construction industry. But, at the same time, the industry won't be allowed to forget who's in the saddle.

Few federal construction programs will be cut back, but Congress will keep a closer eye on federal construction money than in the past and demand a stricter accounting.

Nearly all government construction programs have enough money for the rest of the fiscal year ending June 30. Even if Congress were niggardly with new appropriations, the cuts wouldn't be felt until the next fiscal year.

But in authorizations for next year—particularly in the fields of federal power development, TVA, and public housing—Congress will be less generous. So-called pork-barrel projects—flood control and river and harbor works—will escape serious cuts. Military construction can look for almost as much as last year, but closer scrutiny.

Here's a rundown of what's in prospect in the way of authorizations and appropriations in various areas of construction:

• **Military public works**—The Defense Department will ask for and get about $3 billion of new construction money for fiscal 1954. This new funding will support military construction spending at a rate of $1.6 billion a year up to and beyond the middle of calendar year 1954.

• **Army civil works**—Fiscal 1954 appropriations for flood control and river and harbor projects again will total some $550 million to $600 million—about three-fifths for flood control and two-fifths for navigation. There is little chance that Congress will put the federal government into construction of power projects either at Niagara Falls or in the St. Lawrence River, but it might still join with Canada in building the St. Lawrence Seaway. Any of those developments could increase the future civil works appropriations of the Army Engineers.

• **Atomic energy**—Congressional appropriations to the Atomic Energy Commission can be counted upon pretty much to maintain AEC construction spending at an annual rate of $1.3 to $1.5 billion a year up to June 30, 1954. AEC money requests to the new Congress for fiscal 1954 are expected to total about $2.5 billion. Congress probably will vote close to the amount requested.

• **Reclamation**—Congress will hold a tight check rein on the bureau, as it will also on Army civil works. Strict limitations in future project authorizations and appropriations will require the Reclamation Bureau and the Army Engineers to come back to congressional committees for additional authority before the agencies go beyond the fixed cost limits.

Of the $257 million in new money that Reclamation needs to carry forward its authorized construction projects in fiscal 1954 (ENR Dec. 25, p. 26), not quite all of the cash required will be approved by the Republican-controlled 83rd Congress. On authorization for new starts, however, Congress will take a long, hard look at the proposals before giving a go-ahead on them.

REP. GEORGE DONDERO will head the House Public Works Committee.

The bureau will run into real difficulty in attempting to get construction money to start the $360-million Hells Canyon and the $250-million Mountain Home projects in Idaho, but Congress probably will approve at this session a third powerhouse at Grand Coulee to cost $180 million.

There will be violent opposition to letting the bureau start two Central Valley units in California—the $195-million development on the North Fork of the Kings River and the $140-million project on the Trinity River. Two lower Colorado River proposals tied in with the Central Arizona Project have even less chance of getting started under present circumstances, with the Supreme Court considering Arizona's suit against California over water rights. The 83rd Congress might authorize the $355-million Bridge Canyon Dam, because of the crying need for power, but it certainly will reject the $470-million Granite Reef Aqueduct.

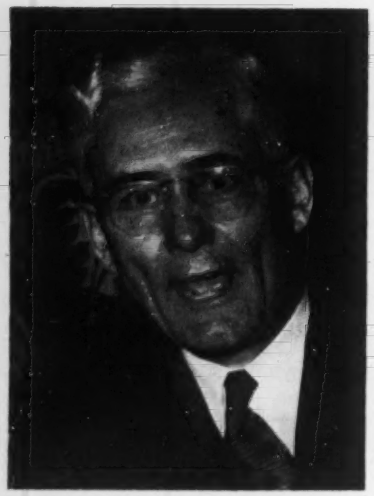
Farther up the Colorado, there are possibilities for authorization of the $400-million Glen Canyon Dam and the $180-million Echo Park Reservoir—both included in the Colorado River Storage Project.

With regard to the Missouri River Basin, the 83rd Congress is expected to approve a start for Reclamation's $115-million Yellowtail Project on the Big Horn River in Montana. Congress also may authorize work on the $160-million Frying Pan-Arkansas Project in Colorado, on the Roaring Fork and Arkansas Rivers.

• More highway money

Federal highway aid of $575 million already is authorized for fiscal 1954 and a like sum for fiscal 1955. Congress won't take up another federal-aid highway bill until the second session of the 83rd Congress, starting in January, 1954.

But there will be pressure on Congress in the present session to channel more money into highways. State governors and their highway officials are united in a demand that Congress return to the states for road construction all the money collected through federal gasoline taxes—either by abolishing



CHAIRMAN of the Senate Interior Committee will be Sen. Hugh Butler.

the federal tax and letting the states collect it or by increasing federal aid.

National farm groups and the general assembly of the states are on record in demanding that the federal government get out of the field of gasoline taxation. The American Municipal Association and other groups of public officials go even farther in urging that all federal automotive excise taxes—more than $1.5 billion a year—be used entirely to build up the national highway system.

Toll roads, too, are going to be under pressure in the present session. Under national highway law, federal aid can be used for toll bridges but not for toll roads. Motor vehicle manufacturers and other big automotive interests are so impressed with the boom in toll roads that they are going to work on Congress to loosen up the law and let the states pay part of the cost of toll projects out of federal aid.

New directives from Congress and from the Eisenhower Administration will broaden federal highway policies of the Bureau of Public Roads this year. A big shake-up in policies and practices—but not in operating personnel—will take place after Commissioner Thomas H. MacDonald retires. He will be 72 in July. The successor to MacDonald, head of the bureau since its establishment in 1919, has not yet been selected.

• Housing shake-up

Congress will soon vote an increased authorization for FHA insurance of home mortgages under Title II of the National Housing Act. Most FHA insurance of mortgages on new private housing is written under this title. The present authorization may be used up by June.

Congress also will raise quickly FHA's insurance authorization for mortgages on home modernization and improvement loans, under Title I of the Housing Act. This kind of FHA mortgage insurance has dried up because the last Congress failed to step up FHA's authority. Builders are crying for action.

There is a big battle ahead over Fannie Mae (Federal National Mortgage Association), the federal government's secondary mortgage market that hands out cash for FHA-insured and VA-guaranteed paper. Bankers and insurance companies would like to see this big government market liquidated, but home builders are strong for continuing it.

Rep. Albert Rains of Alabama and co-members of his subcommittee will press for a law compelling use of a one-year builder's warranty in all sale contracts for FHA and GI houses (ENR Dec. 11, p. 27). Home builders will fight the requirement, but Congress may vote it.

There is no immediate need to authorize more money for defense housing or military housing. Congress may take the military housing program—for families of uniformed and civilian personel—away from the Housing and Home Finance Agency and restore it to the military services.

In fact, a complete reshuffling of government housing functions will be up for debate in the present Congress. There is strong sentiment outside the government and among some Eisenhower advisers and congressmen that HHFA be wiped out and that FHA, the Public Housing Administration and housing research be assigned to other executive departments.

This proposal will get a hearing, but it appears unlikely now that either

SEN. ED MARTIN will be the chairman of the Senate Public Works Committee.

HEADING the House Interior Committee will be Rep. Dean Taylor. (Albany Times-Union Photo)

Eisenhower's executive branch or the Congress will decide to liquidate HHFA. But the new Administration will certainly revamp the housing set-up.

• What's ahead

In the end, the results probably will run something like this:

- HHFA will be stripped of operating duties—such as flood and disaster relief—that have been handed to it and will be put back on the beam as a coordinating and administrative agency for federal housing policies.
- The cumbersome and bewildering National Housing Act—revised, amended and added to through successive Congresses—will be rewritten to reduce and simplify the titles and sections covering various types of mortgage loans that can get government insurance. The rewriting may include a formula to govern the ratio of mortgage loan to appraised value of the property, in place of the present arbitrary percentage ratios.
- Builders and lenders agree that fixed interest rate limitations as administered by FHA and VA—now set at 4½% and 4% respectively—are bad and should be replaced by some system that will allow the law of supply and demand to operate in the mortgage field. You can be sure that the new Administration will quickly do something about interest rates, though its first action may not be the final answer.
- People in the home-building business also agree that packaged mortgages—to cover installed equipment as well as the house—and open-end mortgages to cover repairs and modernization—

should be widely adopted. Congress may do something for mortgages of these types.

• Federal subsidy of local low-rent public housing won't get a complete brush-off from the new Congress, but Senator Taft and other friends of the program will have to work hard to get any more new starts approved than the 35,000 units allowed for this year. There is no chance that Taft can lift the yearly rate anywhere near the 135,000 authorized by his 1949 housing law. Congress in its present temper might even cut the figure for fiscal 1954 to 25,000 or less.

• Other legislation

• **Controls**—Materials rationing of steel, copper and aluminum will remain in effect until June 30, when the Defense Production Act expires.

Eisenhower probably will ask for continuance of a skeleton organization on a stand-by basis beyond that date, but construction will buy in a free materials market after July 1.

Only military and atomic energy projects will be protected by priorities in the second half of the year.

• **Wunderlich Bill**—It was only a senatorial quibble by Paul Douglas of Illinois—beagle hound for federal economy—that held up the Wunderlich Bill in the closing days of the last session. This time it should go through in a breeze. This bill will restore to contractors the right to appeal to the Court of Claims for review of decisions by contracting officers or department heads on disputed questions of fact—such as proper payment for extra work on government projects.

• **Bid shopping**—Hottest construction industry fight of the present session will find general contractors and specialty contractors throwing rocks at each other over Senator Kilgore's bill to require naming of subcommittees and their prices by the general contractor when the general submits his bid proposal for a federal project. Superficially, the specialty contractors' bill would seem to have everything to recommend it and nothing against it.

But the general contractors and government construction agencies make a strong case against the measure. They point out that it hampers and obstructs the general contractor in the performance of his work, increases bid prices and costs the taxpayer more money. Even so, the electrical, plumbing and heating, and ventilating contractors are hot for enactment of the law. If the government agencies should change their position on the bill, it might go through. Otherwise, Congress probably will reject it.

• The labor outlook

About the only labor legislation in prospect this session is revision of the Taft-Hartley law. All sides favor it. Repeal efforts by the labor unions are dead. The AFL building trades have discussed amendments with Senator Taft and feel the law can be amended satisfactorily.

The closed shop will not be restored. But it is likely that the Taft-Humphrey Bill, S. 1973, which passed the Senate last May, will be included in the revised act. It gives relief to the construction industry by permitting contractors to make agreements with unions before work begins and permitting a union-shop contract requiring workers to joint the union after seven days.

Taft would also tighten up the secondary boycott ban by making it apply to direct union pressure on a contractor as well as to indirect pressure on his employes.

Steel for highways boosted

Structural steel tonnage allotted to industry and defense requirements for the second quarter of 1953 is the largest allocation of this key construction material since the Controlled Materials Plan started.

The allotment may also be the last one of total structural steel supplies, since it is expected that the Republicans will give a priority only to military needs, beginning the third quarter of next year. The rest of the supply would be completely free from controls, to be distributed via normal supply and demand.

Almost all claimants for structural steel got a larger allocation for second quarter needs than their allotment for the first quarter. This mainly results from:

• Easing off in demands for structural by the military.

• Allocations were made for almost 120% of the supply, because the controllers figure that "attrition"—i.e., claimants' failure to pick up their allotments—will wipe out the 20% excess in allotments.

The biggest single increase was given to highways—up from 115,621 tons in the first quarter to 185,000 tons (see table below). Other industries benefiting from increased allotments include: electric utilities, petroleum refining, schools and hospitals, construction machinery. The highway allocation, according to DPA, "should permit the highest rate of highway construction ever experienced in the U.S."

Structural steel allotment—first quarter and second quarter 1953

	Tons	
	1st Q	2nd Q
Army	9,800	8,200
Atomic energy	85,758	54,600
Defense Dept.	168,598	145,000
Defense Elec. Power Admin.	90,000	120,000
Defense Solid Fuels Admin.	5,600	5,500
Coal mines	5,100	5,500
Coke oven	6,800	8,500
Federal security		
Education	28,000	33,700
Hospitals	20,100	24,931
General Services Admin.	3,500	5,100
Housing and home finance	5,250	5,000
Dept. of Interior	501	1,745
Office Intl. Trade (export)	31,787	40,000
Petrol. Admin. for Defense	58,800	72,000
Bur. Public Roads	115,621	185,000
Veterans Admin.	1,942	1,100
NPA industry divisions		
Building materials	3,075	4,832
Canadian (export)	35,400	65,000
Construction machinery	22,800	34,407
Facilities construction in water resources	167,250	221,000
NPA total	483,566	673,207
NPA & DPA reserves	46,559	13,240
Total allocations	1,342,565	1,692,785
Supply	1,415,000	1,415,000
% of supply allocated	94.9	119.6

State legislatures face heavy 1953 agenda

Forty-four state legislatures convene in regular session this year. With Mississippi expected to call a special session on school financing, that leaves only Kentucky, Louisiana and Virginia legislatures not due to meet in 1953.

Of those which will meet, all but late-starters Florida and Alabama get right to work this month on prospective legislation having widespread import for the financing, planning, regulation and construction of private as well as public works.

Near the top of the priority scale in states across the country will be:

• **Highways**—With the U. S. highway deficiency recently estimated at $45 billion—required expenditure for adequate roads—pressure will be on for increased highway-user taxes, highway bond issues and toll financing arrangements.

Gasoline tax raises will be sought in more than a score of states. Proposals are most likely in Arizona, Arkansas, California, Colorado, Connecticut, Indiana, Iowa, Maryland, Montana, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, South Dakota, Texas, Utah, Vermont, West Virginia, and Wisconsin.

Increased taxes on trucking will be proposed in many legislatures, with the ton-mile method of taxation getting a strong play—against expected opposition of the trucking industry. New proposals for taxing trucks may be expected to appear in Arkansas, California, Colorado, Connecticut, Indiana, Maine, Maryland, New Jersey, North Dakota, Ohio and Vermont.

New or additional highway bond issues will be considered in many states. The list already indicated is likely to include California, Connecticut, Iowa, Maryland, Montana, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Utah, and Washington.

• **Tolls**—Difficulties of financing highway needs with revenues from current tax funds or with general obligation bonds, or combinations of both, are certain to give rise to the enactment of new toll road legislation in many states.

Present indications are that proposals for new or broadened authority for the construction and financing of toll roads may be introduced in the legislatures of Alabama, California, Connecticut, Florida, Iowa, Kansas, Maine, Maryland, Delaware, Michigan, Minnesota, Missouri, New Hampshire, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Washington, West Virginia and Wisconsin.

Highway revenue needs also will lead to spreading pressure for the further adoption of state constitutional amendments and legislation restricting the use of automotive tax revenues to highway purposes. Such anti-diversion amendments have been written into the constitutions of 24 states already and will be proposed in most of the remaining states this year.

• **Water**—The spotlight will be on Pennsylvania this year for its expected decision on whether or not to join in the Incodel Plan, half-billion-dollar scheme for four-state development of the Delaware River. Since legislation favorable to the interstate compact was scotched late in 1951, Pennsylvania's Governor Fine has had an engineering study made (ENR Jan. 10, 1952, p. 25).

Latest word on this study (made jointly by Gannett Fleming Corddry & Carpenter, Chester Engineers and Greeley & Hansen) is that it was to have been in the hands of the governor's special water resources committee last week. Nothing has been released on what the three consulting firms have recommended.

The compact that would make possible the Incodel Plan (ENR June 28, 1951, p. 104) now has three component states—New Jersey, New York and Delaware having passed the necessary legislation in 1951 and 1952. Pennsylvania's approval would make ready the compact for its necessary congressional consideration and approval.

Other water problems being attacked at state and interstate level will include groundwater control and development bills to be considered in Arizona, California, Montana, Oklahoma, Rhode Island, South Dakota, Texas, and Wisconsin.

Creation of watershed districts as units of government to handle water problems will be debated in Kansas and Nebraska, and in California the State Water Project Authority's request for an additional $750,000 to continue study of the Feather River project will be considered. This is a billion-dollar scheme for a revenue-bond-financed system of flood control and hydro-power works.

• **Pollution**—Stiffer pollution abatement laws will be sought in several states; and a corollary trend of much significance will be action by states to facilitate financing of sewage and waste works. It is expected that some legislation will be considered to give special state tax exemption to ease financing of waste treatment plants by industries.

Other state encouragement to industrial building—in the form of state credit used to build plants for rent to industries—is expected to meet opposition of investment bankers. Massachusetts, Rhode Island, and Vermont will consider authorizing privately financed industrial development corporations to provide credit not available through normal banking channels. Temporary tax exemptions as bait for new industry probably will decline as new tax laws more favorable to industry over the long haul are written.

• **Schools**—Proposals for new or increased state financial aid to localities for public school construction will be introduced widely in extension of a trend which has seen such measures enacted during the last four years in at least 16 states—in amounts totaling more than $1 billion.

Accompanying the trend toward more state aid for such purposes, which already has led to state bond issues in a number of instances and to new major taxes in at least two states, will be further proposals to broaden the borrowing and taxing powers of local school districts for building needs. Consolidation of uneconomical school districts also will be sought more widely as a means of easing the school building problem.

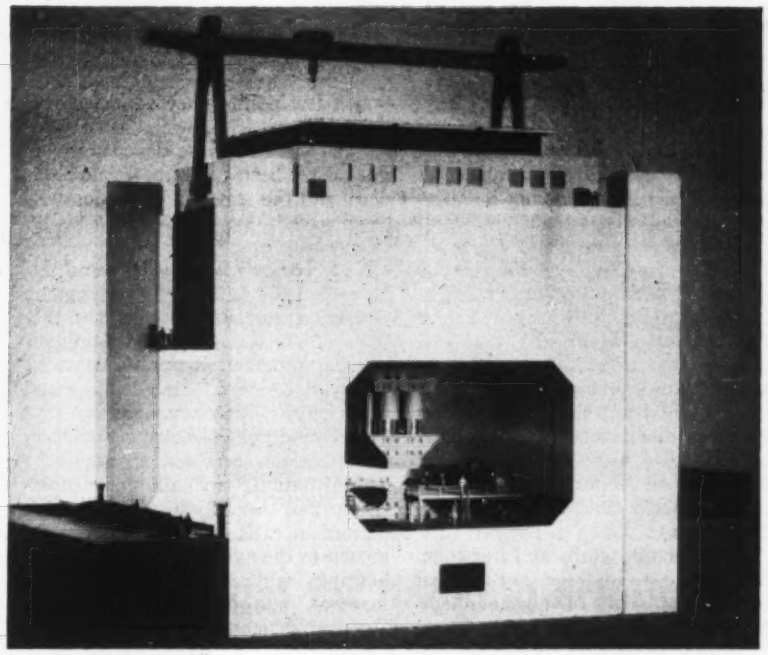
Several states may consider new laws patterned after those of Georgia, Indiana, Maine and Pennsylvania which set up state agencies to finance school construction through revenue bonds amortized from rentals paid by localities for use of the buildings.

The same kind of thinking on financing will extend from schools into institutional buildings. Possibilities of financing state office buildings and certain other types of public buildings through revenue bonds, amortized with revenue which otherwise would go for rent in privately owned buildings, will attract legislative attention.

Connecticut, Kansas, Maryland, Massachusetts, Montana, Oregon, and Pennsylvania will lead the list of states seeking broader borrowing authority for the cost of public buildings.

• **Codes**—Modernized building codes are due to come up for consideration in legislatures of several states, including Iowa, Kansas, Minnesota, North Carolina, and Ohio.

• **Redevelopment**—With urban redevelopment enabling acts already on the statute books of some 33 states, further efforts will be made to speed slum clearance and redevelopment.



THROATLESS PRESS proposed by new company in Cleveland features roof heavy enough to provide pressing reaction. Absence of massive steel yoke gives 360-deg access to press throat. The 75,000-ton unit will handle largest structural parts required in heavy jet bombers and transport planes.

New forging-press design announced

The heavy construction industry will get into the Air Force's heavy-forgings program more deeply than in the past when a well-backed, revolutionary design, announced last week in Cleveland, gets into the construction stage.

The design calls for a mass of concrete above the pressing equipment, to provide the reaction for the pressing force. This roof would weigh 75,000 tons in the case of a 75,000-ton press. Columns located at a distance from the equipment carry the concrete roof's dead load down to a simple foundation slab. This design eliminates a complicated deep foundation (which up to now has been the principal problem for heavy-construction art) and it eliminates the huge steel yoke arrangement that customarily takes pressing reactions. A further advantage of the design is that it permits unobstructed access to all sides of the press throat.

Ready to build presses of this design is the Throatless Press Co., recently incorporated by the Austin Co., Cleveland builders, and the Hydraulic Press Co., of Mt. Gilead, Ohio. The new company claims its press can be built almost any place, at less cost and in less time than a similarly installed conventional press.

At the unveiling of a model of the proposed 75,000-ton press, A. T. Waidelich, an Austin Co. vice-president and its research manager, told ENGINEERING NEWS-RECORD that it can be built in 18 months at a cost of $25 million.

Waidelich pointed out that this new method frees press construction from complicated transportation problems that have arisen in connection with heavy and bulky parts for big conventional presses.

The only machine work is on the press itself. Existing machinery in this country is sufficient for the work, it was reported. "No single piece of a 75,000-ton press, for instance, would be larger than the head of a German 13,000-ton extrusion press," it is stated.

Estimated size of the pressroom itself is 80 by 50 ft. Side walls may measure 20 ft in thickness with the roof 50 ft thick, making it almost bombproof. Over-all height is indicated at 180 ft, 30 of which would be the below ground-level pressroom. Direct hydraulic pressure will come from the roof to the unit instead of from below or from the side.

Heavy presses are required for production of parts for military aircraft. The new press would be the largest in the world. It has more than four times the capacity of the largest press now operating in the United States—an 18,000-ton unit at the Wyman Gordon plant, Worcester, Mass. It also would exceed the capacity of a 35,000-ton press that the Russians removed from their zone of Germany.

The basic idea is that of C. A. Van Dusen of the Van Dusen Engineering Co., Escondido, Calif., who envisioned the installation of huge presses in caves or tunnels where they would be afforded natural protection from air attack. There, the upper press element might be suspended so that the force of gravity, inherent in the natural mass above, would eliminate the need for the massive steel elements that have been a problem.

Van Dusen assigned his rights to HP and Austin. The new company works on a 50-50 basis under an agreement with Van Dusen Engineering.

Although no construction contracts have been placed, the Air Force has viewed the model and reportedly is "very much interested in the idea."

Kentucky discloses plans for 40-mile toll road

Plans to build a $22-million, 40-mi turnpike between Louisville and Elizabethtown, Ky., were announced last week by Gov. Lawrence W. Weatherby. He said the project has been recommended by the consulting engineers, Coverdale & Colpitts.

Initially, the turnpike would consist of four lanes of divided highway. It would be financed by revenue bonds. The proposed route would parallel U. S. Route 31W which has become congested by vehicle movements in and out of Fort Knox, the Army's armored training center.

Plans to extend the road eventually to Nashville, Tenn., 187 mi south of Louisville, are being discussed by officials of the Kentucky and Tennessee Highway Departments. The Louisville-Nashville section can be completed by 1955, if work on it starts this summer, according to the engineers' report.

• **Other progress**—First contracts for the $150-million toll road across northern Indiana are expected to be awarded in March, 1954. The entire four-lane divided highway may be completed by the end of that year, according to a statement last week by Bruce Short of the Indiana Toll Road Commission.

Connecticut's legislature will consider construction of a "Nutmeg Turnpike" across the eastern part of the state from New York to Rhode Island. Roughly, the proposed route would parallel U. S. Route 1.

In Ohio, Harrison Construction Co. was low bidder for paving the first 5.2-mi section of the Ohio Turnpike beginning at the Pennsylvania border, at $3.5 million.

Air Force counters charges of extravagant construction

Charges, of plush and extravagant construction by the Armed Forces, which were leveled by a subcommittee of the House Committee on Expenditures in the executive department, received a counterblast last week.

The chief target of the report—the Air Force—disclosed that cost studies and lowering of construction standards have enabled it to trim $1 billion from the estimated cost of building accommodations for 143 wings.

The disclosure, made by Assistant Secretary of the Air Force Edwin V. Huggins, came on the heels of news that the Senate Armed Services Committee is holding up between $50 million and $60 million for construction of overseas air bases pending further study of the program.

At the start of the Korean war the Air Force had estimated construction to expand the Air Force from 48 wings to 143 would cost about $9.5 billion—not including bases built under the North Atlantic Treaty Organization. Huggins said current estimates show the total, including a substantial amount of NATO construction, will be between $700 million and $800 million less than the first estimate, while reduced cost of the NATO building program will bring over-all savings close to the $1-billion mark.

• **Detailed reply**—Military construction men queried by ENGINEERING NEWS-RECORD generally regard the subcommittee report as picayune, pointing out that the committee added no new ideas to what had been said before. Unofficially, here are some explanations that were given regarding the committee criticisms:

In defense of dormitory-type barracks, Air Force people explain that separate rooms instead of squad rooms are necessary to meet 24-hr operational requirements. Individual rooms not only serve staggered around-the-clock Air Force operations, they also offer an inducement for re-enlistment—at a big saving in the $50,000 training cost for a new man. No dormitory-type barracks are built in such places as overseas processing centers, where there is a fast turnover of personnel.

Air Force construction men agree that large barracks cost less per man than small ones. All the new construction calls for two-story, 133-man barracks and three-story 198-man units. No more of the old 85-man barracks are being designed. But that was the only size the Hardy committee saw completed and in operation.

It's true, Air Force people admit, that they had bought 20 commercial-type maintenance hangars for big bombers before the ultimate plane configuration was known, but those hangars—at three AF bases—will give service for a long time and will return a substantial part, if not all, of their cost before they are converted to any other use. And, they say, the pressure to get maintenance facilities for cold-weather stations would not allow longer delay in buying the hangars. Incidentally, the new AF wing hangar for big bombers is an all-purpose design that meets all needs cited by the committee.

As for granite curbs at Limestone, Me., these use a local low-cost material—really granite culls. Every state highway department in New England uses the same kind of curbs; they are cheap and durable in New England winters.

Construction experts in the three services had similar explanations for many other committee comments. But—on a few points—they admitted the committee criticisms were structurally sound. Most of those deficiencies already have been corrected in new designs, and the remaining few soon will be corrected.

• **New charges**—Before week's end the House subcommittee on Government Operations released more charges, this time scoring the $212-million military housing program in Alaska centered chiefly at Ladd and Eielson Air Force bases and Ft. Richardson.

The report charged Army Engineers with "serious weakness in contract administration," including lax supervision and inspection of contractor performance. It noted "an uneven approach to the austerity goal in Alaskan housing," and cited unsuitable design, materials and construction methods "to meet economy demands and military needs."

Florida toll road faces test

One of the biggest and most controversial problems to face Florida's incoming administration will be construction of a $233-million, 441-mi toll turnpike system to run north and south between Miami and Jacksonville with an east-west extension to Tampa. When interest during construction is added, the total cost rises to $255 million.

Construction of the entire project "at the earliest possible date" has been recommended by the State Improvement Commission, following a new feasibility report from Coverdale & Colpitts, New York consulting engineers. But that report contains the seed of renewed discussion because it indicates that inclusion of the east-west toll highway would make financing of the entire project difficult.

The first report on the proposed toll-road system was made by Parsons, Brinckerhoff, Hall and Macdonald, consulting engineers of New York, as part of a comprehensive report to the Florida State Road Department on the entire highway system of the state. That firm's report treated the 314-mi highway from Jacksonville to Miami and the 130-mi cross-state extension of that highway to Tampa as a unit and found the 444-mi system feasible.

Subsequently, the Parsons firm recommended that before construction was authorized an independent check of the feasibility should be made as banking houses require such a check. The Coverdale & Colpitts report, therefore, was authorized.

The latter report states: "The earnings prospects of the full 444-mi, $255-million turnpike are so diluted by inclusion of the sub-marginal 130-mi east-west branch that doubt is cast on the feasibility of financing and building the complete turnpike as a single project financed solely by revenue bonds."

While the east-west branch would cost 29% of the total turnpike cost, it would produce only 5.6% of the revenue available for retiring the debt in the first year of operation. The remaining 94.6% for debt service would have to come from the north-south section, the report said.

• **Other toll-road plans**—The next session of the Delaware legislature will weigh a proposal by the Delaware State Highway Commission to permit the construction of a toll highway which would link the Delaware Memorial Bridge with the Chesapeake Bridge.

West Virginia's Turnpike Commission has ordered studies on feasible routes for extension of the 88-mi Charleston-Princeton toll highway, now under construction, to the Virginia line near Bluefield a distance of about 12 mi. The studies will help determine the location of the proposed link between the West Virginia Turnpike and a Virginia toll turnpike now in the planning stages.

April 1 has been scheduled as the date for opening the $38-million Oklahoma City-Tulsa toll turnpike.

LARGE-SCALE EARTH MOVING has Oahe substantially under way. (Omaha World-Herald photo)

Oahe is target for flanking attack

The military tactic of defeat in detail has emerged in the latest attack on the Army Engineers' Oahe Dam near Pierre, S. D. (ENR Dec. 11 p. 26). Although the stepped up momentum of the controversy has brought all features of the dam under fire, the heaviest barrage is being concentrated on the James River irrigation project.

The dam's opponents, composed of those who oppose public power and landowners whose property will be flooded, feel that the James River project may be the Achilles heel of the $285-million Oahe, the largest Missouri River main stem dam to be built under the Pick-Sloan plan.

The James River project is for irrigation. Plans call for lifting water out of Oahe Reservoir and over the Missouri River divide into the valley of the James.

The water thus taken out of the Missouri would be spread on approximately 750,000 acres of James Valley land in an area stretching from Aberdeen to Huron. Requiring 25 years to construct, this Bureau of Reclamation project would cost $216 million.

• **The maneuver**—Here is what's behind attack on the James River project:

1—One reason for a high Oahe is the James River job. The cost of lifting the water out of Oahe Reservoir and over the Missouri-James divide would be expensive if water were not banked up high behind the dam.

2—If the James River project can be shown to be impracticable, a major reason will have vanished for building Oahe so high.

3—Generator capacity of 425,000 kw—the largest of the Missouri dams—is planned for Oahe. Since power is in ratio to the height of a dam, lowering Oahe would reduce its capacity substantially. This would give comfort to those who oppose public power.

4—With the irrigation and power features either cut off or reduced, flood control would remain as Oahe's principal function. Limiting Oahe to flood control would pave the way for opponents to press their claims for two low dams instead of a single dam at Oahe.

Thus the rug would be jerked out from under the proponents of the structure of which the Army Engineers Brig. Gen. W. E. Potter said: "No Oahe, no Pick-Sloan plan."

This master plan of strategy in the Oahe fight shaped up through the statements of the two principal leaders of the opposition.

One is State Senator Frank Ferguson of South Dakota, who has announced plans to ask the legislature, which convenes the first week in January, to urge Congress to halt funds for Oahe's construction. The major claim is that the James River project, still in the planning stage, has not been proved a sound one.

"We just want to see to it that all the answers are known so no mistakes are made," Senator Ferguson said. Until they are, he declared, Oahe should be held up. Otherwise, he asserted, there would be a "constant threat of irrigation project development in the James River Valley."

State Senator L. R. Houck also voiced his stand at a recent meeting of the South Dakota Co-ordinating Committee for Missouri Basin Development at Pierre. He said it is conceded a dam is needed at Oahe for flood control but that "we want a commitment that irrigation will not be forced on us."

J. W. Grimes of Huron, district manager for the Bureau of Reclamation, countered that "South Dakota can't afford not to have a high Dam at Oahe."

Mr. Grimes said that studies so far have shown 277,000 acres physically suitable for irrigation. An additional 622,000 acres have been established as irrigable in all save drainability, on which studies are not yet complete.

The charges for power will pay for all other power costs and the cost of other benefits which water users cannot absorb, he said.

Lieut. Col. M. W. Whitsitt, executive officer of the Omaha District of Army Engineers, said two small dams would cost $100 million more than the large Oahe Dam and would flood more land.

In addition, two dams would result in the loss of virtually the entire power capacity at Fort Randall Dam because of the need for additional flood control. Fort Randall's spillway would have to be enlarged at a cost of $25 million to handle additional flows, he said.

Navy urged to use fly ash in concrete

A trial use of fly ash in concrete mixes is being urged upon the Navy, reports Commander W. L. Chilcote, CEC, USNR, and now deputy highways engineer with the Baltimore Bureau of Highways. Producers of fly ash, including many power plants, are eager to find a market for it, he says.

Fly ash is a very fine mixture, resulting from furnace-burned pulverized bituminous coal. The particles are collected on the plates of electrostatic precipitators located within the heating system. The ash is filtered and stored.

The use of fly ash as a source of fines in Portland cement concrete mixes and bituminous concrete road pavement mixes has been advocated for many years. Considerable research has been undertaken. A very complete report for example, has been prepared by the G. & W. A. Corson Co., Inc., of Plymouth Meeting, Pa., for the Consolidated Gas Electric Light & Power Co. of Baltimore.

During October, 1950, a test section of highway pavement was placed in Baltimore, Md. One-half had concrete in which one bag of fly ash was substituted for one bag of cement in the 6½-bags-per-cu yd mixture. Tests showed that the fly ash concrete had strength of 600 lb. per sq in. or one-fifth higher than cement concrete.

The Baltimore Water Supply Bureau has specified that fly ash concrete be used in the construction of its Liberty Dam.

Contractor withdraws low bid

Harrassed by a two-month controversy over the use of union labor and the Virginia "right-to-work" law, a union contractor withdrew his bid for a housing project in Alexandria, Va.

Here are the principals in the dispute:

- Victor R. Beauchamp, Inc., of Washington, D. C., low bidder ($1.2 million) and a member of the Master Builders Association and the Construction Contractors Council.
- The Alexandria Redevelopment and Housing Authority, which earlier had decided to reject Beauchamp's bid.
- Public Housing Authority, a federal agency which was supposed to pay some of the costs of the project and wouldn't accept the authority's decision to reject the bid.
- Southern Iron Works, an Alexandria steel fabricator, who protested the award to Beauchamp and fought it by getting an injunction.

• **Contract and protest**—The job is a low-rent housing project of 148 units.

Two months ago, after Beauchamp had submitted its bid, but before the bids were opened, Southern Iron protested acceptance of bids from any member of the Master Builders or Construction Council.

The protest cited an agreement between the contractor groups and the Washington AFL Building Trades Council to hire only union labor. This, the protest said, violated the Virginia "right-to-work" law.

The protest also said that because of the union-contractor agreement, a non-union steel fabricator would be cut out of the work. (Southern Iron has been open-shop since last August.)

Southern Iron also said that the awarding of the contract to a union contractor would violate the secondary boycott provisions of Taft-Hartley.

Last week Southern Iron got a court injunction forbidding the award of the contract to any union contractor for 10 days.

• **Beauchamp**—The Washington firm, however, on the same day that Southern Iron got its injunction, had withdrawn its bid.

Spokesmen for the firm said that attorneys had advised them that they were not in violation of the Virginia law by reason of their union agreements.

Further, Beauchamp declared that there was nothing to prevent them from accepting bids of non-union steel fabricators. They agreed that a union builder might be inclined to favor union fabrication to avoid possible labor difficulties.

Beauchamp set a deadline for the authority to accept or reject the bid and when the deadline was reached withdrew its bid.

• **Public Housing Authority**—John Taylor Egan, PHA administrator, said that his advice to the housing authority was to award the contract to the lowest bidder, because it couldn't accept a high bidder.

PHA also warned the authority that it was in danger of losing its federal appropriation because of the conflict.

• **Alexandria housing authority**—The authority declared that it had never effectively awarded the contract to Beauchamp.

The authority also put itself on record as believing that union contractors (specifically of Washington) find it more expedient to discriminate against Virginia open-shop contractors than to obey the Virginia law. This arrangement, the authority said, discriminates against Virginia contractors and violates the law.

The issue of whether or not they could accept bids from union contractors was put up to the state attorney general.

'52 had record number of strikes

Building trades unions played a large part in making 1952 the worst strike year since the Taft-Hartley labor law went on the books five years ago. In all U. S. history, only 1946—the period of postwar readjustment—was worse than last year, according to the Bureau of Labor Statistics' preliminary report on 1952 strikes.

In 1952, the construction industry stood out for its poor record. Of all industries, construction had the most big strikes: 11 major ones involving more than 10,000 workers. This was one-third of the total of 34 for all industries. Five were on atomic construction projects.

The 11 big construction stoppages of 1952 were only one less than the total of 12 covering a six-year postwar period. There were four in 1950, two in 1949 and three in 1947 and 1946.

For all industries in 1952 there were more strikes (4,950), more workers involved (3,500,000), and more man-days of strike idleness (55,000,000) than 1946, the record-setter.

• **Records**—But 1952 did set a new record of its own. The 34 strikes that affected at least 10,000 workers broke the 1946 record of 31.

Four of the atomic construction strikes were at Paducah, the fifth at the Savannah River project.

The largest construction stoppage involved 70,000 AFL building tradesmen in Detroit.

Calendar of the biggest 11 strikes

- March 3 (1 day)—F. H. McGraw & Co., Paducah AEC project; 11,500 AFL sheet metal workers. Issue: erection of warehouse bins and racks by plant employees.
- March 10 (8 days)—F. H. McGraw & Co., Paducah AEC project; 12,000 AFL building trades workers.
- March 31 (60 days)—San Francisco bay area construction industry; 35,000 AFL carpenters.
- April 16 (31 days)—Milwaukee construction industry; 18,000 AFL building trades workers.
- May 1 (23 days)—New Orleans construction industry; 15,000 AFL building trades workers.
- May 6 (23 days)—Construction industry in 42 northern and central California counties; 45,000 AFL carpenters.
- May 12 (23 days)—Detroit construction industry; 70,000 AFL building trades workers.
- June 25 (8 days)—F. H. McGraw & Co., Paducah AEC project; 18,000 involved; wage dispute, AFL hod carriers.
- Aug. 11 (10 days)—F. H. McGraw & Co., Paducah AEC project; 14,000 AFL plumbers, teamsters and carpenters.
- Oct. 6 (4 days)—Cleveland construction industry; 30,000 AFL building trades workers.
- Nov. 11 (1 day)—Miller Electric Co., Savannah River AEC project; 18,000 on strike in dispute involving AFL technical engineers.

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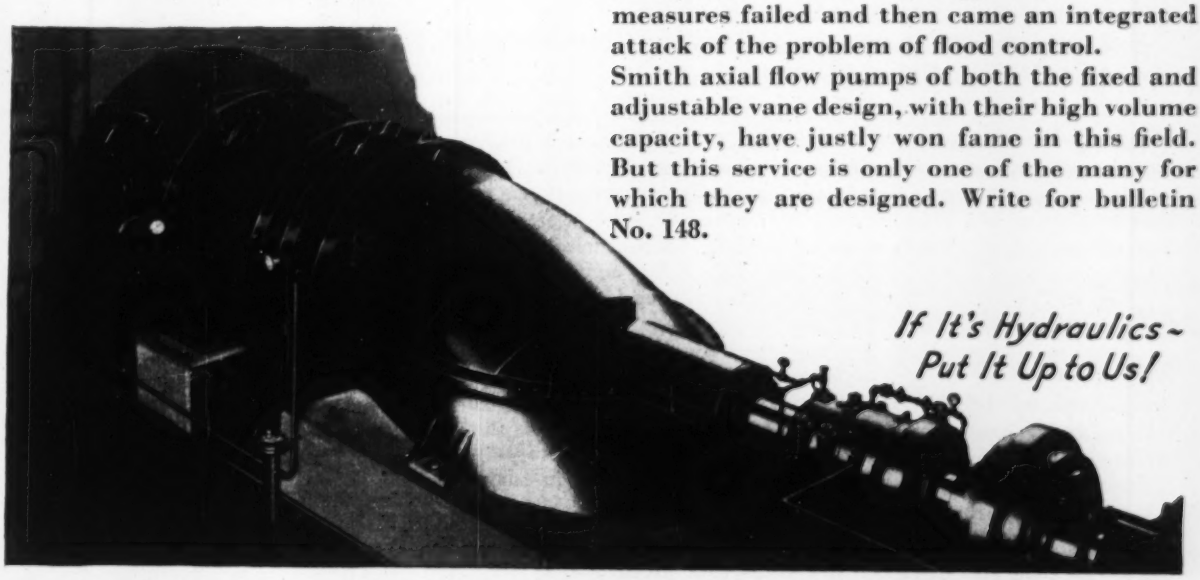

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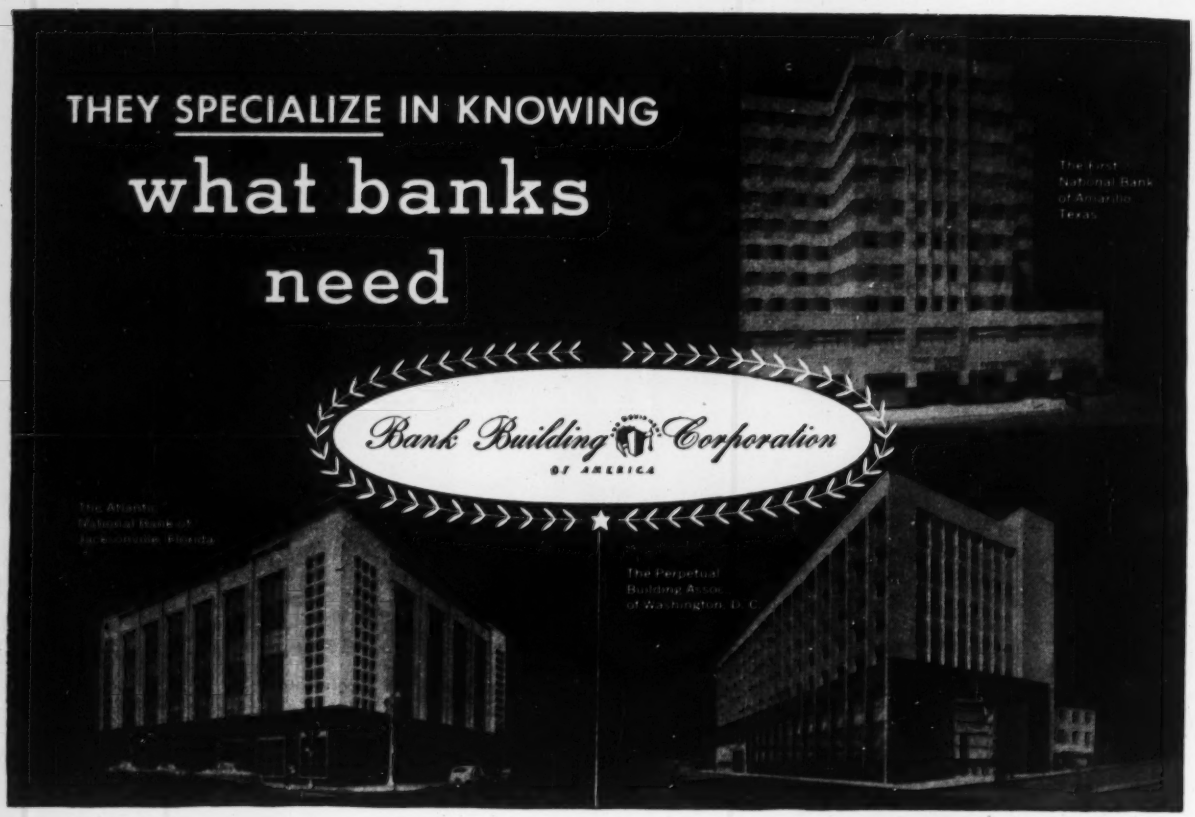

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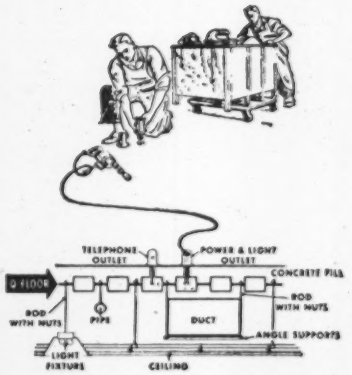

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NLRB broadens meaning of secondary boycott

The National Labor Relations Board has tightened up the application of present Taft-Hartley provisions outlawing secondary boycott strikes.

Over the Christmas-New Year holidays the board ruled, 3-1, that a product boycott by union members was designed to force their U. S. employer to stop doing business with a Canadian supplier and thus was unlawful union activity.

The strike occurred at the Sound Shingle Co., in Marysville, Wash., a wood shingle producer and processor. Members of the shingle weavers' union, chartered by the AFL carpenters, walked off their jobs soon after they discovered that Canadian-made shingles were to be used.

By refusing to handle the Canadian shingles, the union members were following a standing policy of their union—and many others—not to work on non-union made goods.

In deciding the case brought by the Sound Shingle Co., the NLRB had to go a little afield to find that the activity violated T-H, since the typical element of a dispute with the producer of the boycotted product was absent.

• **Arguments**—In the shingle case, the union argued that since its strike was against the Sound Shingle Co., the primary employer, and since the union had no "active dispute" with the Canadian shingle manufacturer, the strike was not covered by the T-H secondary boycott ban.

However, the NLRB majority, consisting of Chairman Herzog, and members Styles and Peterson, referred to the legislative history of the law to show that Congress did not intend to limit the ban to the common secondary situation.

Specific reference was directed to statements by Senator Taft, in which he included within the conduct banned by the law those strikes called by unions against employers because they handle certain products made under conditions disapproved by the unions.

In a dissenting opinion, Member Abe Murdock took issue with the board for ruling the strike illegal. In his view, the strike was legal because it was primary action to insure the use of American-made shingles in American mills.

The union was ordered to stop its fight against the use of any Canadian-made shingles in the company's mills and to permit its members to work for the Sound Shingle Co.

Six-hour day in Canada?

British Columbia carpenters won't seek a six-hour day in 1953 because "it's too big a jump at one time."

The six-hour day proposal was rejected at the 10th annual convention of the Provincial Council of Carpenters (AFL) in Vancouver. Carpenters now work an eight-hour day.

Council executives will meet in January and are expected to draft the following contract demands, discussed at the annual meeting: double time for all overtime; some statutory holidays with pay; providing carpenters with four instead of two weeks' paid annual holiday.

The carpenters also decided to ask for amendments to the Canadian Trade Union Act which would stop British Columbia courts from issuing injunctions against "peaceful" picketing.

Closed-shop violations ended by voluntary pact

The Los Angeles regional office of NLRB has announced a voluntary agreement by union and industry groups ending hiring practices held to violate closed-shop provisions of the Taft-Hartley act.

Negotiations began two years ago when a construction worker, Donald L. Cain, brought charges of illegal discrimination against two employers. The discrimination charge was based on the AGC master contract with the AFL Building Trades Council, and AFL hod carriers union Local 300.

The board decided to try for a voluntary agreement among the parties, both on the specific case and the general principle involved. The board's intention was to see that the law wasn't violated but that construction hiring wasn't complicated unnecessarily.

• **Agreement**—The general point was cleared up in a new contract which removed any interpretation requiring job seekers to be union members. The new provision set up hiring on a seniority basis, with no reference to union membership.

The newly announced agreement provides for publication of the fact by both council and AGC that they will not make union membership a requirement for hiring.

In addition, Local 300 and the two employers—Louis C. Dunn and Del Webb Construction Co.—agreed to pay Cain $1,400 for time lost through the assertedly illegal practices.

Under terms of the agreement, the local NLRB office is requesting the national board to issue an order formally requiring what has been voluntarily agreed to, and a court order will be sought subsequently.

The agreement affects all contractors associated with AGC in the 12 southern California counties. A similar agreement is being worked on now with BCA, which is also a party along with AGC in the area-wide master labor contract.

Local NLRB officials think that the southern California master labor agreement is the only one in the country that will stand strict scrutiny on the closed-shop issue.

Supreme Court lowers fine in labor standards case

"An employer commits only one offense—even though there may be several violations of duty—when those violations arise from that singleness of thought, purpose or action . . . deemed a single impulse."

That is the rule announced recently by the Supreme Court on an appeal brought by the Justice Department from a similar ruling in a lower federal court.

The ruling cut down the possible penalty for violations of the Fair Labor Standards Act by the Universal C.I.T. Credit Corporation, Kansas City, from an original $320,000 to only $30,000.

Under FLSA, employers who are covered must perform three duties:

- Pay a minimum wage of 75 cents an hour;
- Pay time-and-a-half for more than a 40-hour work week;
- Keep employment records.

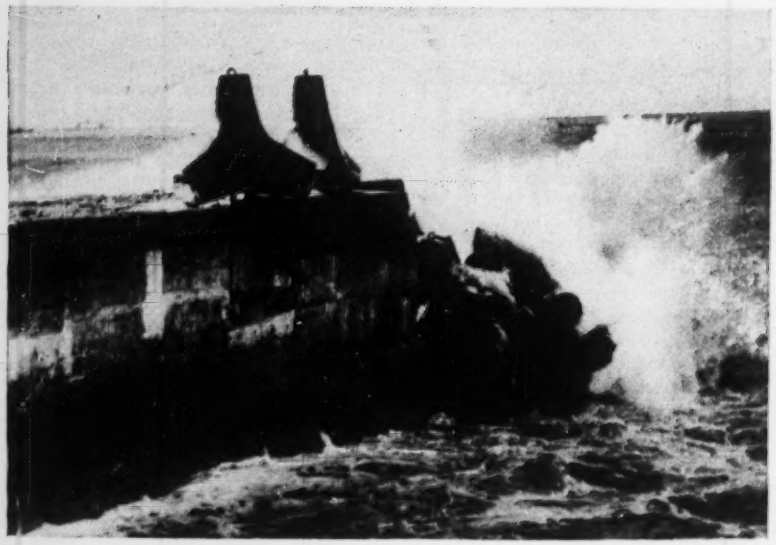
The criminal penalty provisions of the law set a maximum fine of $10,000 for the willful violation of any of these provisions.

This suit against Universal C.I.T. alleged 32 separate FLSA violations: six under the minimum wage, twenty under the overtime and six under the records-keeping provisions. Thus the government asked a penalty of $320,000.

But the district judge hearing the Justice Department's case ordered consolidation of the separate acts into three charges—one violation for each of the duties imposed on Universal.

Though losing the appeal, the government still is free to change its charge against the company and allege several "courses of conduct."

But the Court's decision will mean heavier burdens of proof on the government.



The tetrapod: Science develops a jetty block

DIRECTLY OUT OF a French hydraulic laboratory has come a radically new type of precast concrete block that may end the disquieting record of failures that for years has plagued the builder of such harbor protection structures as jetties and breakwaters.

Already used with success in three North African harbors, the block consists of a central body from which radiate four symmetrically-spaced, truncated conical legs. Systematic model tests accurately determined the proportions of the different parts for best hydraulic and mechanical characteristics. The blocks, so far made in 4, 15 and 25-ton sizes, are placed by random dumping.

Contemplating the shape that their designs and model studies had produced, the engineers of the Neyrpic Hydraulic Laboratory, Grenoble, France, named their blocks tetrapods. And among the advantages claimed for them are the following: Since there are practically no plane surfaces, any tendency for the blocks to slide on one another is eliminated; the legs encourage interlocking and increase the hydraulic roughness of the jetty facing; the conical shape of the legs favors the progressive wedging of the blocks under wave forces; and, no matter how much the sea may cause the blocks to shift, porosity of the jetty is always assured.

More than anything else it was this need for porosity, recognized from model tests of more conventional breakwater types, that led to the development of the tetrapods. Back in 1946 Neyrpic was commissioned to study designs for a facing of the usual rectangular or cubical blocks on the seaward slope of a large breakwater to be built at the Mers-el-Kebir naval base in Oran, Algeria. According to Pierre Danel, director of the laboratory, model tests showed that despite the very considerable weight (400 tons) of each of the blocks, the underpressure developed in the body of the structure was great enough to disintegrate the facing and cause it to slip outward.

However, when the vertical edges of the blocks were beveled so that there would be chimneys between adjacent blocks to relieve the pressure from the water left by a receding wave, the facing remained stable. This same conception of relieving underpressure was later applied to vertical-face quays and breakwater parapets. In this particular case, the bottoms of the blocks were scored, forming drains along the horizontal joints between blocks.

With the idea of the elimination of under-pressure thus firmly in mind, the Neyrpic investigators next turned to the shape of the block. It was well known, and corroborated by model tests, that plane-sided concrete blocks are less stable than quarried natural stones of the same average weight laid on the same slope and subjected to wave action. However, quarried rock is seldom if ever available in large enough pieces for big breakwaters, so that recourse to precast blocks has been necessary. The sizes of these blocks has been limited only by the capacity of the placing equipment, but

LOTS OF LITTLE TETRAPODS are used to repair a damaged breakwater of cubical blocks at Sousse, Tunisia. The tetrapods weigh 4 tons each, and 1,300 of them were cast.

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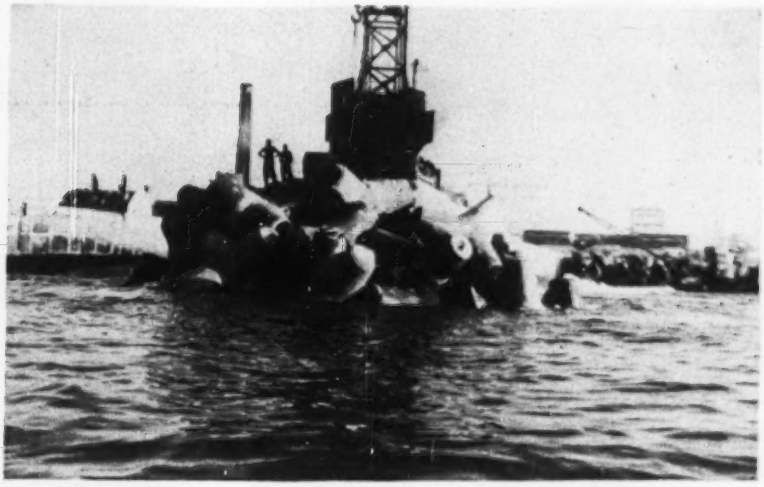


RANDOM DUMPING is the method used to build tetrapod jetty. This one, at Casablanca, is being constructed of 15-ton blocks.

some of them have weighed as much as 500 tons. Despite this weight, the sea shifts the blocks, and particularly so if sufficient porosity is not available in the body of the breakwater. The result is that the hydraulic roughness of the breakwater is diminished or that the structure slumps and disintegrates.

Desirable features of a block that would avoid these disadvantages were listed: assure permeability of the breakwater; give it a rough surface; contribute to its stability and strength. Considering the expensive equipment required to place heavy blocks, relative lightness was another desirable characteristic for a breakwater block. From these considerations the tetrapod was born.

The first opportunity to model test a prototype structure came with the proposed construction of two protecting moles for the seawater intake of a steam power plant at Casablanca, Morocco. Past experience had demonstrated that cubical blocks weighing 50 tons could not stand up to the wave action there. Model tests showed that 25 ton tetrapods would suffice. Actually, because of a lack of heavy placing equipment, 15-ton tetrapods were used, and have proven successful over their first two years of service. Not far away, the main breakwater at Casablanca is protected by rectangular blocks. Each of these blocks weighs 100 tons.

The heads of the water intake moles at Casablanca are protected by 360 tetrapods weighing, as stated, 15 tons each. At present under construction at Safi, Morocco, is a large breakwater containing 1,250 tetrapods weighing 25 tons each; and already completed is a repair job to a cubical block breakwater at Sousse, Tunisia, in which 1,300 tetrapods weighing 4 tons each have been used for the new facing.

STEEL FORMS, braced upright on one leg, are used to cast the tetrapods.

From the Neyrpic tests and from actual field experience, the developers make three significant claims for harbor structures built with tetrapods: the slope of the facing can be as steep as 45 deg, thus cutting down the overall volume of the structure; the unit weight of the tetrapods can be reduced considerably over that required for equally stable plane-sided blocks, so that less expensive handling equipment is required; a structure of tetrapods reflects waves to a minimum amount so that its overall height can be reduced without danger of waves passing over the top.

Neyrpic has patents on tetrapods pending in all principal countries and is offering licenses for their casting and use through the Societe D'Exploitation de Brevets pour Travaux a la Mer, 155 Blvd. Haussman, Paris (8), France.

Rain-making efforts are continued in Arizona

After two years' intensive experimentation with artificial rainmaking in Arizona, the Salt River Valley Water Users Association feels justified in continuing the program, according to R. J. McMullin, general manager.

The association now is using 16 ground generators over 12,000 mi of the Salt and Verde River watersheds, which comprise the 220,000-acre Salt River Project.

From June, 1951, to March, 1952, the association operated the ground generators a total of 2,772 hr.

While there was no way to measure how much more precipitation resulted than would have fallen had rainmaking machines not been in operation, residents of the area treated said that rainfall was above normal.

And the Forest Service indicated that "the machines kept the forest so wet down that hundreds of thousands of dollars had been saved in Fort Apache Indian Reservation timber."

The technique used by the Water Users was developed largely by Jake West, chief hydrographer for the association, and his assistant, Borden Goodwin.

After three years of experimenting with both aerial and ground distribution, the Water Users have developed a silver iodide smoke generator unit using liquid gas as fuel.

The acetone, sodium iodide, and silver nitrate solution used in the generators is prepared by Chief Chemist Russell Mann and is transported in glass jugs.

Four tanks of propane gas and 20 gal of solution usually are left in each place so that an adequate supply always is at hand. A tank of gas will operate the unit about 15 hr, and 1¼ gal of solution is burned with every tank.

The propane gas is released from the top of the tank through a pressure regulator to the top of the silver iodide tank, the pressure not to exceed 10 lb.

Part of the 10-lb pressure is used to force the iodide solution from the tank through a ceramic filter to the spray nozzle burner. The balance of the pressure flows directly to the spray nozzle burner.

A welder's lighter is used to ignite the propane gas. This makes a colorless 16-in. flame.

The generating units can be constructed for about $100. Chief difficulty is getting the units into the mountainous country. Two-way radio communication systems are used to instruct operators when to turn on generators.

FORMWORK for flat-plate floors of an office building in Washington, D. C., made a fine working platform. To minimize interference between trades, piping, wiring and sleeves were installed after bottom reinforcing was placed; then top bars were laid.

Flat-plate office building goes up fast

SIMPLIFIED FORMWORK paid off in dollar and time savings on erection of the first flat-plate reinforced concrete office building in Washington, D. C. The contractor, erecting his first structure of this type, found that his work went forward with ease and rapidity. And the architect expressed pleasure with the flexibility the design permitted him in making plans for the floor layouts.

Flat-plate construction—there are no drop panels or column capitals—was also used for the roof where boilers and air-conditioning equipment are located. The thick slab required to support these heavy loads may well earn the roof a reputation for being bombproof.

The structure, known as the 1001 Connecticut Ave. Building, is 12 stories high. It provides 178,000 sq ft of floor area, of which 132,000 sq ft is rentable office space.

The exterior consists of limestone facing and continuous aluminum sash glazed with heat-absorbing, glare-resistant glass. In the interior, floors are finished with asphalt tile, and ceilings with acoustic plaster bonded to the concrete with a sprayed-on plastic. This method of attaching the plaster made finishing of the underside of the concrete floor slabs unnecessary and saved about 12¢ per sq ft in finishing costs.

• **Flexible layout**—The plan provides a service core—four elevators, two stairways, toilets and several shafts—in the interior of the building at a rear wall. Offices are arranged around the perimeter of the building for maximum daylighting. Partitions may be placed wherever desired without interference from beams, drop panels or column capitals. Column spacing is large enough—about 19 ft—to offer practically no obstruction to any subdivision plan that may be desired by the tenant.

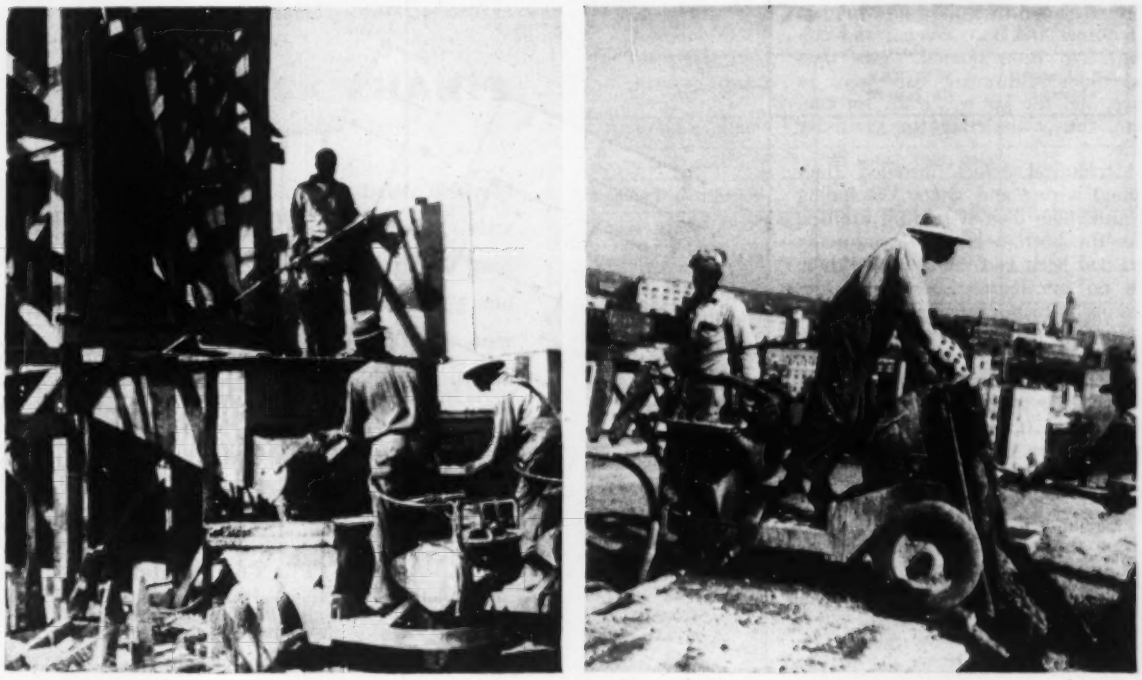
SHORES supporting the 18-in. thick roof slab were closely spaced 3x4-in. timbers. Stringers were not nailed down.

The entire building is air conditioned. Periphery-zone supply air from the roof is forced down to each level at high velocity through circular ducts placed between the outer columns and the exterior walls. Interior-zone supply air is fed from a shaft in the core to corridor ducts for distribution. The air is exhausted through corridors into the main shaft in the service core for reconditioning at roof level.

• **Basement rented**—Location of mechanical equipment in a penthouse was brought about by Washington zoning laws, which restrict the height of office buildings to 12 stories or 130 ft. In order that the owner might receive a suitable return on his investment, it was necessary that the site be utilized to the maximum. With the height restricted, the only additional rentable space available was underground; the owner decided to rent the basement. A subbasement was considered for the equipment but ruled out because of ground water at that level.

That meant that another location had to be found for the mechanical equipment. Best alternative was the roof, where a variance from the zoning laws permits space for a penthouse and machine room above the restricted office-usage levels.

Other savings resulted from this shift of equipment besides the gain



POWERED BUGGIES, fed two at a time from a hopper, traveled over plywood platform to distribute concrete to the forms. The 390 cu yd of concrete for an average floor was cast in one day.

from making available valuable rental area in the basement:

A stack running the entire height of the building was eliminated, as was the need for an extensive supply and exhaust ventilating system in the basement.

Loads on the roof from the equipment are high: There are two boilers weighing 35,000 lb apiece; a compressor, which with its concrete base weighs 85,000 lb; and two air washers, each weighing 25,000 lb. There also are fans weighing up to 11,000 lb, preheaters and filters.

To complicate the flat-plate roof design even more, zoning laws required a setback at the 110-ft level, eliminating the exterior columns. As a result, it is necessary for the roof slab to be cantilevered 14 ft along two sides of the building.

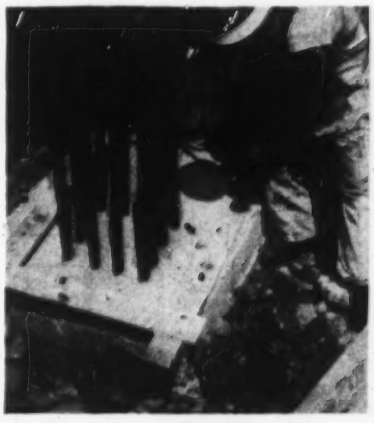
• **Roof required heavy shoring**—The structural engineer met these conditions with an 18-in. thick reinforced concrete slab, tapered to 5 in. in the cantilevers. Including the columns below, this roof pour required 740 cu yd. It was placed in two days.

Formwork for the slab was supported on a veritable forest of shores—3x4s spaced 2½x3 ft on centers. In addition, building officials insisted that three successive floors below also be shored, the lowest of the group being carried on at least four shores per bay.

The ¾-in. thick plywood forms for the roof slab were supported on 3x4 joists spaced 8 in. on centers, and these, in turn, rested on 4x6 stringers spaced 3 ft on centers.

• **Floor forms**—Forming and casting the floor slabs below was a much easier and less costly task. These slabs are only 8¾ in. thick. Reinforcement also is light—averages only 7 lb of steel per sq ft of floor for slabs, columns and foundations—because the slab is thicker than required for balanced design.

Though untreated except for oiling, the plywood forms for the floor were re-used six or seven times before replacement was necessary. The plywood was supported on 3x4 joists spaced about 1 ft apart. The joists were carried on 4x6 stringers at 4 and 5-ft intervals, and these, in turn, were supported on 3x4 shores about 4 ft apart. For easy stripping, this assembly was not nailed, but laid loose.



CARTRIDGE-POWERED TOOL fastened bottom yokes for column forms to concrete footings and floors.

Spandrel beams also were easy to form. These members are wide (34 in.) and shallow; they project 3¾ in. below the floor slab to permit the interior face to be formed with a 2x4.

At the outer face of the spandrel beams is an 8-in. wide concrete apron that projects about 6 in. below the beams. The windows extend up to this apron, which is kept free of the columns and has a 1-in. joint at mid-span to prevent it from taking floor loads that might crack it.

• **Seven-day cycle**—One floor was cast per week. The 390 cu yd of concrete, that were used in an average pour covering about 13,000 sq ft, were placed in one day.

One hoist with a 1¼-cu yd skip delivered mixed-in-transit concrete at the rate of a load every ½ min. to a hopper with two discharge gates. These fed powered buggies of ½-cu yd capacity. Traveling over temporary wood platforms, the buggies distributed the concrete to the forms.

The schedule generally worked out like this: Concrete was placed starting on a Thursday morning. By midnight that day, the night crew had forms set up for the 54 columns for the next

story. By noon the following Monday, slab forms had been erected and columns had been poured. Two days later floor reinforcing bars were in place, and the job was ready for concrete, thus completing the seven-day cycle.

Mechanical trades installed their piping, wiring and sleeves, including an underfloor duct system for utilities, after the bottom layer of reinforcing bars had been laid. As a result, there was no interference between trades working at each level.

Concrete used tested at 3,000 psi in 7 days and 4,500 psi in 28 days. (The District of Columbia building code requires a test strength 50% above design values.) It was a 1:1.76:3.13 mix, with a slump of 5 in. A cubic yard contained 7 bags of cement, 8.2 gal of water.

• **Fast fastening**—One tool used on this job that is worthy of mention because it proved fast and economical was a cartridge-powered stud driver.

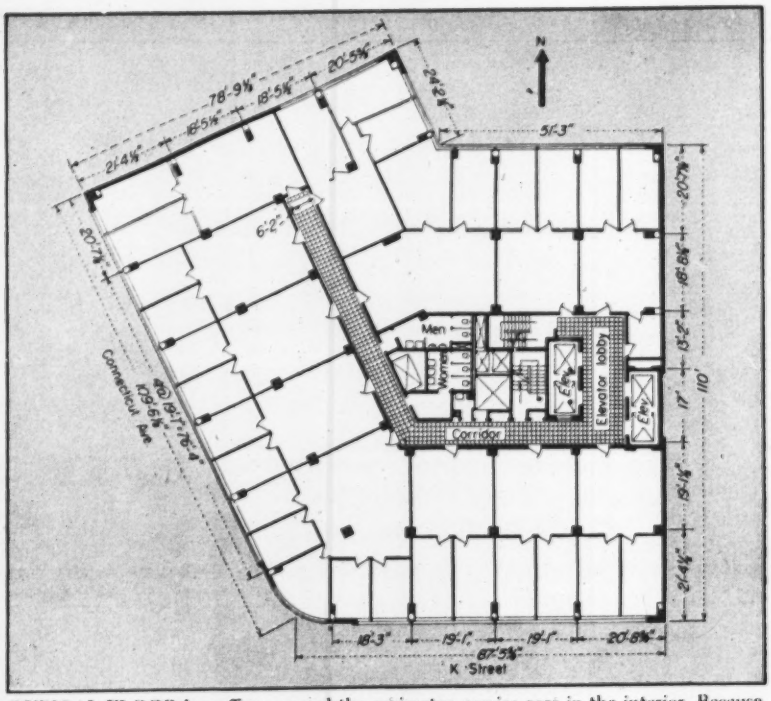
One assignment during construction of the foundations was to tack nailing strips to the brick basement wall of an adjoining building. This structure did not extend to the lot line, and therefore, an outside form was needed for the foundation wall for the new building. Old plywood panels, which could be left in place, were used for this form. They were nailed to wood strips and fastened to the existing wall with ¼-in. dia by 2⅜-in. long studs shot from the tool.

Another task was to nail wood templets to concrete footings and floors, to serve as a yoke for the bottom of column forms. Set to chalk lines, the templets each consisted of four 1x6s. First, two of the pieces were anchored to the concrete with studs; then, the other two were nailed to the first pair. The job took a carpenter about 5 min. By contrast, fastening similar templets on other structures with cut nails required nearly an hour.

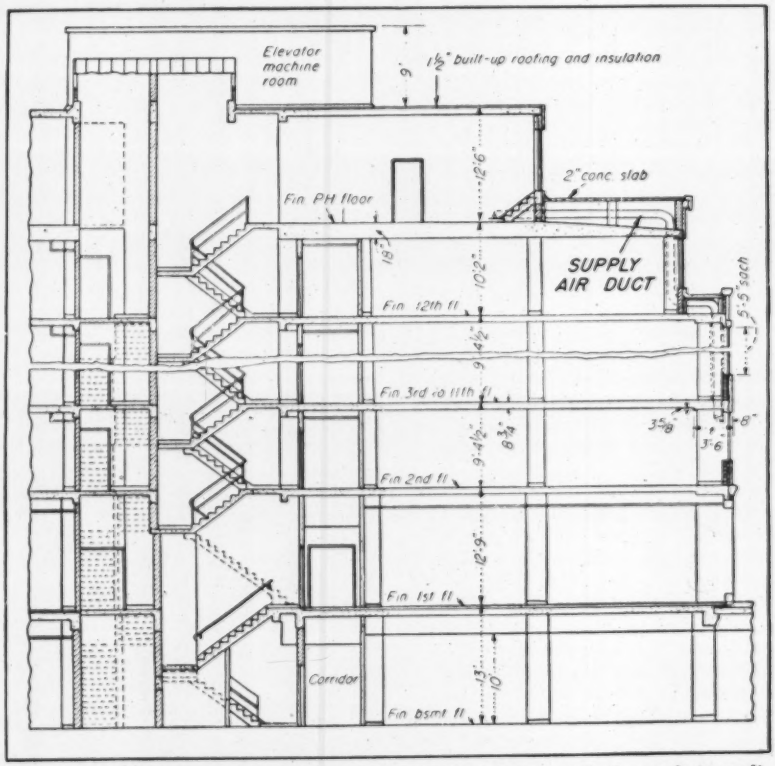
The cartridge-powered tool also was used to fasten premolded expansion-joint material around the bottom of concrete basement walls, for holding aluminum window frames in place and for attaching curtain rails to the underside of floor slabs.

• **Designers and builders**—Edwin Weihe, of Washington, D. C., was the architect. Jacob Feld, of New York City, was the consulting engineer on structural design and foundations.

John McShain, Inc., is the owner and general contractor and performed the concrete work. J. B. Hauck, vice president, is in charge; Ben Coffman, field superintendent, and John Schwartz, assistant superintendent.



TYPICAL FLOOR has offices around the perimeter, service core in the interior. Because of the flat ceiling, partitions may be placed wherever desired to subdivide the space. Plaster was applied directly to the underside of the concrete floor slabs and bonded with a sprayed-on plastic.



PART SECTION shows thick, cantilevered roof slab that supports boilers and air conditioning equipment. Supply air ducts feed down between outer columns and exterior walls. The air is introduced into rooms through under-window air-conditioning units. Interior-zone air is fed from a shaft in the service core.

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Crane Capacity, 10′ Rad.	28,500 lbs.	
Hoe Boom	20′ 0″	
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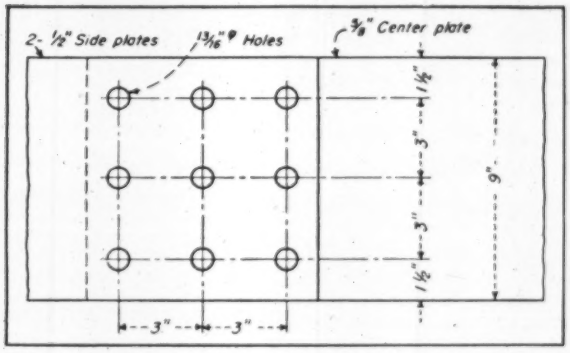


FIG. 1. TYPICAL JOINT with fasteners in rectangular pattern and with equal gages was studied in new tests.

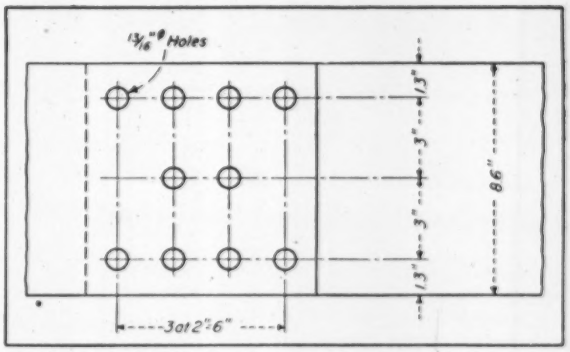


FIG. 2. UNEQUAL GAGES, resulting when one fastener is omitted from the first row, may improve joint efficiency.

Here's a better way to design splices

LARGER LOADS may be permitted on riveted or bolted connections between steel tension members than at present allowed if conclusions reached by Frederick W. Schutz, Jr., in his doctor's thesis prove acceptable to specification writers.

The thesis was prepared while he was a graduate student at the University of Illinois. Schutz, now a professor at Lehigh University, refers to his findings as "the relative gage method."

The reason for this name is not hard to find: The method is based on an empirical formula for joint efficiency in which a key factor is the relative gage. This is the ratio of the gage G, or transverse spacing, of fasteners to the diameter, D, of the holes in the first transverse row of fasteners in the joint.

When the fasteners used are adequate in size and number, so that the plates will fail before the fasteners, Professor Schutz's test results indicate the most advantageous patterns. His formula, he says, predicts the efficiency of the joint more accurately than the equations given in current specifications. Since efficiency is the ratio of the strength of a joint to that of the members connected, the strength of the joint can be computed easily when the efficiency is known.

To develop this formula, Professor Schutz made 130 tests of joints—the largest single series of tension-failure tests ever made at one place. He also restudied data from more than 1,000 tests made in the United States since 1882.

In this study, no test results were excluded if the joint failed in plate tension. The joints studied were both lap and butt type and were made from a wide variety of materials, such as wrought iron, structural steel, armor plate, and various aluminum alloys. In addition, both riveted and bolted joints were included. All of the test results studied verify the formula developed.

• **Four major factors**—His research indicates that many factors influence the efficiency of riveted joints that have plate failures. But only four of these factors are of major importance: (1) the fastener pattern, (2) method of making the holes, (3) ductility of the materials connected and (4) ratio of bearing stress to tensile stress in the joint.

Design rules in existing specifications consider only the fastener pattern and ignore the effect of the other factors on tension failures, Professor Schutz claims. Furthermore, he says, these rules are not in agreement with tests in which fastener pattern is the only variable.

• **Effect of rivet arrangement**—The most important factor affecting the efficiency of riveted or bolted joints is the fastener pattern. It can cause efficiency to vary from virtually zero to 87 to 90%.

Spacing, or gage, of the fasteners in the first transverse row is of major importance. Tests showed a definite relationship between the efficiency and relative gage (G/D) of a joint.

Joint efficiency varies from zero to a maximum value as the relative gage varies from 1 to about 8. Splices with relative gages greater than 8 do not show significantly larger efficiencies than joints with values of 8. Therefore, there is no particular advantage in spacing longitudinal lines of rivets farther apart than 8 times the hole diameter.

Staggering alternate fasteners in the first transverse row increases the efficiency of the joint if the stagger is large enough and if the gage over which the stagger occurs is less than 8-hole diameters. For all practical purposes, Professor Schutz says, when the stagger is equal to two-thirds or more of the gage, the offset holes may be ignored and the line of failure taken across the first line of fasteners. When the ratio of stagger to gage (S/G) is less than two-thirds, the joint may be considered to have no stagger. And the line of failure may pass through fasteners on two rows.

• **Punched holes weaken joint**—The second variable is the method of forming the holes. Punching them, for example, can decrease joint efficiency 13% to 14% compared with joints with drilled holes. The effect of subpunching and reaming has yet to be determined.

• **Ductility improves strength**—The third factor—ductility of the connected material—was not recognized by previous investigators, Schutz points out. Yet, the range of ductilities found in common structural metals causes variations in the efficiency of riveted joints of about 15%.

As a measure of ductility, the researcher selected reduction in area, R, of standard control coupons of connected material. Tests showed that joints made with a material with R equal to 10% have efficiencies about 15% lower than the same joints made with a material with R equal to 57%. Joints made with material with R greater than 57% do not show a marked increase in efficiency over the same joints made with material with R equal to 57%.

• **Effect of bearing**—The fourth major factor is the ratio of bearing stress to tensile stress in the joint. Splices with ratios of 2.0, 2.5 and 3.5 may be 95%, 85% and 50% as efficient, respectively, as one with a ratio of 1.5.

The ratio is limited in current U.S. specifications to 2.0 or less for steel structures. As a result, the effect of

this stress factor on efficiency is small and may be neglected for most practical cases of steel design.

• **Efficiency formula**—Professor Schutz expresses the relationship between the four major factors and the efficiency of a joint with uniform gage in the first transverse row in the following empirical formula:

$$E = 1.05\,(100 - 90\,D/G)KBH$$

but E cannot be greater than 87% of KBH. In this formula, E is efficiency in percent; D is actual hole diameter; G is transverse spacing of any two successive holes in the first transverse row; $K = 0.82 + 0.0032R$, but not more than 1.00; R is reduction in area of standard control coupons in percent; B is a function of the ratio of bearing stress to tensile stress and is equal to unity for ratios less than two; and H is a function of the method of making the holes, being equal to 1.00 for drilled holes and 0.862 for punched holes.

• **How to design a joint**—For design purposes, the formula can be put in a form that yields the effective net section of a plate in a splice. The product of the effective net section by the allowable unit stress must be equal to or greater than the load on the joint.

Before the formula can be applied, however, some terms must be defined: A gage strip is the portion of the tension member bounded by the longitudinal center lines of two successive holes in the chain of holes being investigated. A transverse edge distance is considered as one-half of a gage strip that has a gage twice the edge distance. The effective net section of a gage strip is the product of the effective net width and thickness of the strip.

For a chain of holes extending across a part in a zigzag, diagonal or straight line, the effective net section of the part is the summation of the effective net sections of all the gage strips along the chain of holes. Holes with an S/G of two-thirds or more are not included in the chain. The critical net section of the part is obtained from the chain with the smallest effective net section.

The effective net width, G_e, of a gage strip may be determined from the following equation:

$$G_e = 1.05\,(G - 0.9D)KH$$

but cannot be greater than $0.87GKH$.

• **Example 1**—Find the effective net width of the plates in the joint in Fig. 1. The holes are drilled and R for the plate is 30%.

The joint may be considered to consist of three equal gage strips, formed by the two interior gage strips with $G = 3$ in. and the two edge strips with a combined gage also equal to 3. $K = 0.82 + 0.0032 \times 30 = 0.916$, and $H = 1$. Then,

$$G_e = 1.05\,(3 - 0.9 \times 1\tfrac{1}{8})\,0.916 \times 1 = 2.18$$

Effective net width $= 3 \times 2.18 = 6.54$ in. If the allowable unit stress is 20,000 psi, the safe load on the joint is $20 \times 6.54 \times \tfrac{1}{2} = 81.7$ kips.

TENSION TESTS on riveted and bolted joints of many types were made by Prof. F. W. Schutz, Jr. Findings may lead to a new design method.

• **Example 2**—Find the effective net width of the plates in the joint in Fig. 2. The holes are drilled in plates having an R of 57%.

This splice may fail along one of two lines. One possibility is straight across the joint at the first row of fasteners. The second possibility is through the fasteners in the first row and the center fastener in the second row.

However, since the S/G for the diagonal failure is greater than $\tfrac{2}{3}$, the latter possibility may be ruled out.

For the failure straight across the joint, the plates may be considered to consist of two gage strips, one formed by an interior strip with $G = 6$ in. and the second by two edge strips with $G = 2.6$ in. Both K and H equal 1.

For the center strip, $G_e = 0.87G = 0.87 \times 6 = 5.22$ in., the maximum allowable. (When G/D is equal to or greater than 5.25, the effective net width of the gage strip is $0.87G$, and G/D for this interior strip is 7.38.)

For the edge strips:

$$G_e = 1.05\,(2.6 - 0.9 \times 1\tfrac{1}{8}) = 1.96 \text{ in.}$$

Finally, the effective net width of the plates is $5.22 + 1.96$, or 7.18 in.

• **Noteworthy conclusions**—Some of the more important results of Professor Schutz's tests are:

1. Fastener tension has only a very slight effect on joint efficiency. A reduction in fastener tension from 40,000 psi to zero on the gross section of the fasteners caused an increase of about 2% in test efficiency. Nor has variable fastener tension across a fastener pattern a noticeable effect.

2. Staggering alternate fasteners in the first transverse row of a joint increases efficiency. There is a value of stagger that will give maximum efficiency; further increase in stagger will not increase efficiency, but will increase the likelihood of fastener shear failures. For joints with a gage 4 times the hole diameter, optimum stagger is approximately equal to the gage.

3. Joints with a stagger in all transverse rows behave in the same way as joints with stagger in only the first transverse row.

4. Gage, method of forming holes and ductility of connected material have an important effect on joint efficiency, as indicated by the formulas presented in this article. Maximum joint efficiencies that were obtained consistently ranged from 87 to 89%.

5. The longitudinal spacing, or pitch, of the fasteners has no great effect on efficiency as long as the failure occurs in the plates. The most important effect of increasing the pitch is the possibility of changing the failure from one in the plates to shear of the fasteners.

6. Joint efficiency is virtually unaffected by the number of longitudinal or transverse rows of fasteners as long as there are enough fasteners in the joint to prevent a shear failure.

7. When a joint has variable gages along the transverse failure section, the position of the minimum gage along this section has no significant effect on efficiency.

8. Thickness of the plates has no effect on efficiency if the plates fail in tension.

The investigation was carried out by Professor Schutz as a graduate student under Prof. Nathan M. Newmark at the Engineering Experiment Station of the University of Illinois. The work was sponsored by the Research Council on Riveted and Bolted Structural Joints, the Bureau of Public Roads and the Illinois Division of Highways. The council is now studying these test results.

CHESAPEAKE BAY BRIDGE for whose suspension span there was developed a . . .

Quicker cable-strand erection method

Blair Birdsall,
Chief Engineer Bridge Division
John A. Roebling's Sons Co.
Trenton, N. J.

Details of manufacturing and erection procedures for the prefabricated main-cable strands of the Chesapeake Bay Bridge (ENR Aug. 7, p. 40) were sufficiently different from the prevailing practice of the past 20 years to justify a more detailed description.

• **The old method**—In the past during prestretching operations in the factory, the strands were measured to exact length under their average dead-load tension. They also were marked for tower-saddle and cable-band positions, as well as for the points at which they were to be cut. The strands then were socketed and placed on individual reels for shipment to the bridge site. There, during erection, the tower-saddle marks simply served as guides for erection and gave a preliminary adjustment.

During the period of manufacture, voluminous computations had been performed to obtain sag-temperature charts. Such charts defined the line of sight necessary to establish the proper sag of the free-hanging strand in any span for any temperature and any tower position. Final adjustment of the strand in the field was made by a survey party using these charts.

Simultaneous readings of line of sight, tower position and temperature were made for each span. Corrections were made as indicated by the chart and readings taken again as a check. This was done for the first strand in each of the two main cables, and care was taken to see that the final sags of the free-hanging first strands of the two cables were at such relative positions that they would come to the same elevation under dead load.

In spite of the fact that the strands had been marked for tower positions, this extra precaution was considered desirable and necessary in order to cancel out any small inaccuracies that might have crept in due to errors in span surveys at the bridge site, errors in measuring strand lengths.

• **The new method**—Time-consuming steps were eliminated during preparations for the erection of the cables of the Chesapeake Bay Bridge. It was agreed by conference among the prime contractor, the cable manufacturer and the engineers that an attempt would be made to set the cables without sag charts and without an instrument survey in the field.

STRANDS were placed in horizontal layers on successive nights. Bottom layer, which was guide, was positioned without surveying instruments.

Particular care was taken to check the field survey locating the piers and anchorages. A great deal of research and development work has been done at the prestretching plant of the cable manufacturer to refine methods of measuring tension and length. Special reeling procedures were developed and used to the end that the strand, as measured, would be disturbed as little as possible by reeling and unreeling. Furthermore, all strand measuring at the plant was done at night in order to insure a uniform temperature.

There are three strands in the bottom layer of each cable. These six strands were erected with normal shims at the anchorages and with their tower-saddle marks placed exactly on their prescribed positions. There were slight differences in length of the three strands of each group with respect to each other, as evidenced by their sags. Adjustments were made to bring each strand to the center of gravity of its group of three strands. Thereafter, additional strands were simply adjusted to the first three.

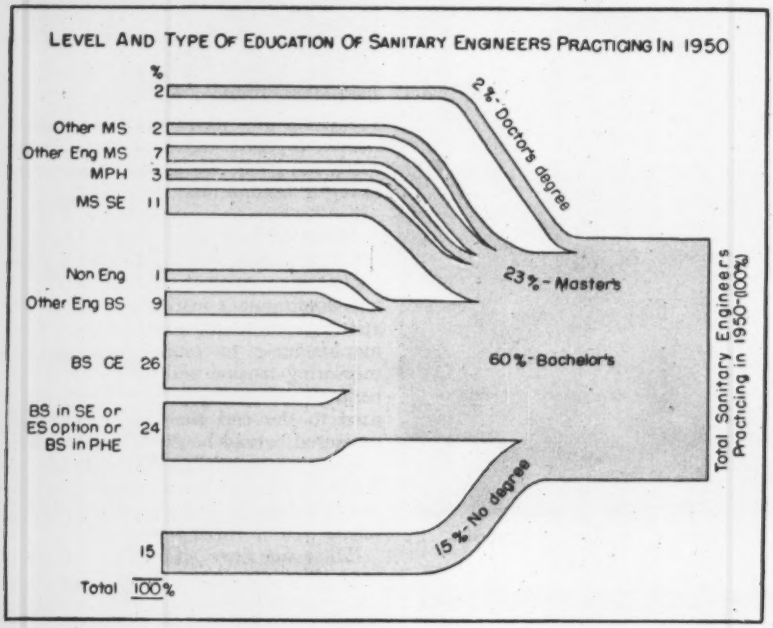
• **Method was successful**—The success of this program is evidenced by the fact that in the completed bridge the geometry of the structure is entirely satisfactory and comparable to structures erected by the field survey method.

The cables were manufactured, measured and reeled by John A. Roebling's Sons Co. under a sub-contract with the prime contractor, Bethlehem Steel Co. The Roebling company also supplied materials for the cable-erection foot-bridge and tramway, as well as the other primary items of cable erection equipment. Roebling also furnished the suspender ropes.

Roebling was represented by J. M. Herrmann, in charge of the design of erection equipment and F. M. Meyerend, in charge of assembly of equipment. H. W. Hills acted as field consultant on cable erection problems.

The sanitary engineer . . .

Where he comes from . . .



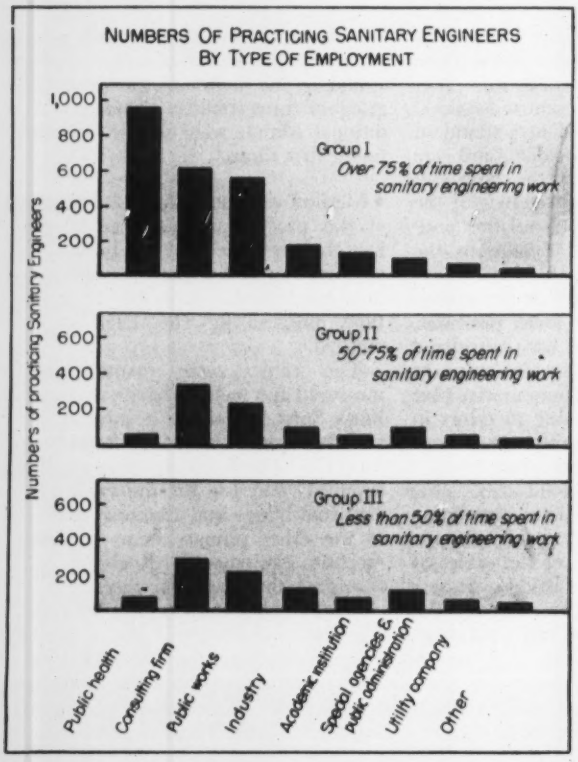
WHO IS A sanitary engineer? Where does he work? What are his activities? How old is he? What is his professional background? What has been his education?

These questions and others are answered in an analysis just put out by Arthur P. Miller and W. A. Lyon of the Division of Engineering Resources, U.S. Public Health Service. They have analyzed figures collected in a 1949-50 survey by the American Public Health Association. Their product, "The Composition of the Sanitary Engineering Profession," is available from the Superintendent of Documents, Washington, D. C., for 15¢.

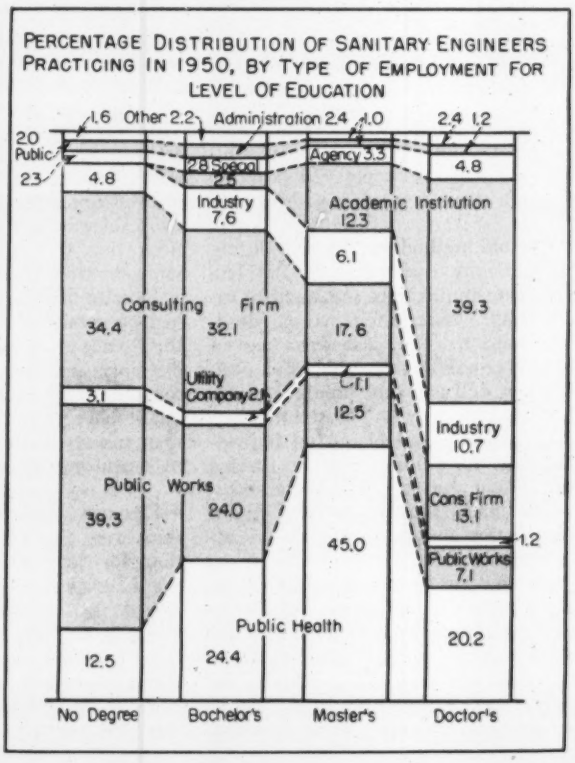
Out of 6,368 replies, 4,116 were judged qualified for inclusion in the analysis, based on the National Research Council's definition of a sanitary engineer: briefly, a bachelor, at least, in engineering who by specialized study, training or experience is fit to conceive, design, direct, and manage engineering works for the protection of public health. (Experience is considered in lieu of education on a 2 to 1 basis: 8 years of appropriate experience equal to a 4-year engineering course.)

Respondents were grouped accord-

Where he goes . . .



With what education . . .



ing to the percentage of their time spent on sanitary engineering work: Group I, 75% or more; Group II, 50 to 75%; Group III, under 50%. By this grouping, the analysts endeavor to show how type of work differs among those who spend various proportions of their time in the field of sanitary engineering.

Some 5,000 persons in this country practice sanitary engineering. Roughly two-thirds of them devote more than 75% of their time to it. And two-thirds of them had no sanitary engineering education. About half are in public agencies, and 80% are somehow connected with water and sewage problems.

Where the sanitary engineer works is pictured in an accompanying chart. His employment related to educational level is also charted.

What he does is listed as follows in descending order of activity: 27.8% public health work, 18.6% design, 15.3% consulting, 13.1% municipal engineering, 9.1% plant operation, 4.5% teaching, 3.8% construction, 2.8% sales, 1.9% research, 0.5% research, 0.2% editorial and 2.4% other. His fields, in descending order, are water supply, sewerage, administration, industrial hygiene, pest control and food and milk sanitation.

Statistics show the sanitary engineer in group I, defined above, to have a mean age of 42.8 years. In group II it is 46.7 years; group III, 47.8 years.

Only 35% of those practicing sanitary engineering have had what has been prescribed as a minimum sanitary engineering education (opposed to 85 to 90%, the range of civils, electricals and chemicals educated in their specialties). Therefore, most have transferred from nearby fields. Half of all those responding have worked outside the field up to 3¾ years. Another quarter have done other work for 3¾ to 10 years. The rest spent over 10 years outside sanitary engineering.

Schooling of sanitary engineers is a subject of continued discussion (See ENR July 24, p. 40). But one thing is sure—the educational level is rising. There is a growing increase in those with advanced degrees, especially in the younger age group. In the 25 to 39 age group one third have advanced degrees; over 40, the fraction is one-sixth. About 80% of those who do graduate work in sanitary engineering come from civil engineering undergraduate courses. The civil engineering curriculum is still the basic undergraduate education for the greatest number of sanitary engineers.

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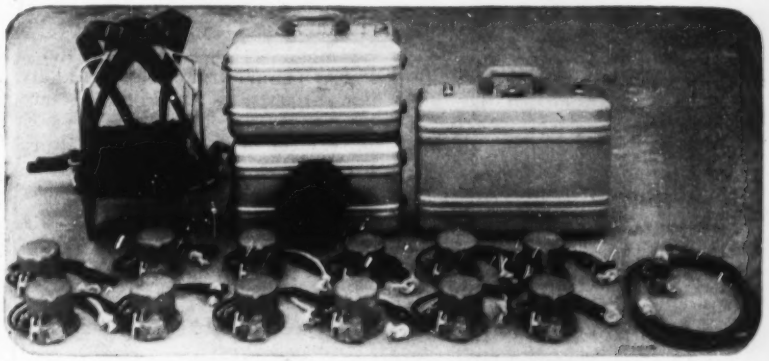

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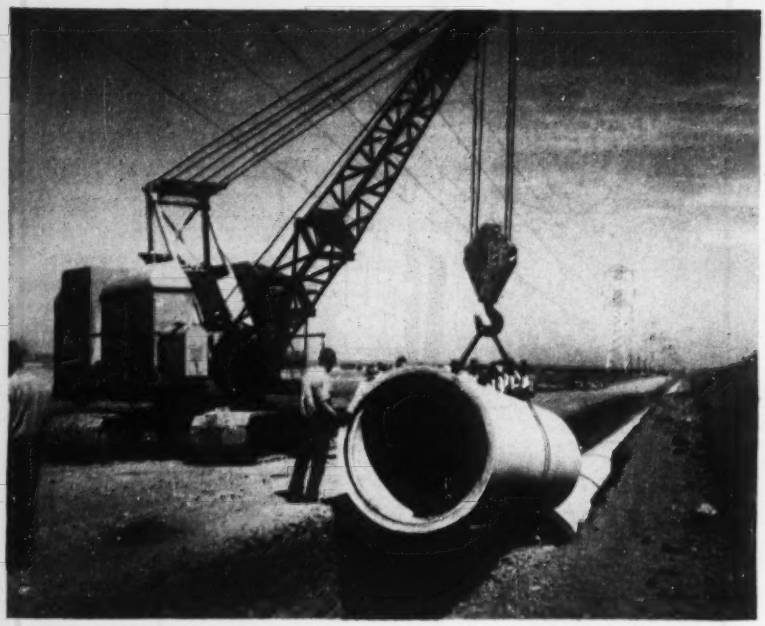


CONCRETE PIPE was laid for new San Joaquin Valley line. This work included 32.3 mi of 61-in. ID pipe. It permitted maintenance on the existing line. (ENR photo)

San Francisco water lines completed

San Francisco's $25-million, bond-financed expansion program for construction of new water supply lines has been completed. Half the money from the bond issue, voted in 1947, was allocated to the Water Department for a pipeline around the southern end of San Francisco Bay, and half to the Hetch Hetchy Division for construction of a second San Joaquin Valley pipeline.

The department's new Bay Division pipeline No. 3, which went into service this year, branches out from the end of the Coast Range Tunnel and is laid around the south end of the San Francisco Bay instead of crossing it at Dumbarton Strait as do the other two pipes. It terminates at Pulgas Tunnel west of Redwood City. For a quarter of its 34-mi distance, the line is 78 in. in dia, and 72 in. dia for the remainder. With its capacity of 76 mgd, it brings total capacity for delivery of water from the mountain and Alameda systems to San Francisco up to about 190 mgd.

The line was placed around the bay, instead of under it, to avoid the possibility of a submarine disturbance cutting off the total supply. At the same time it provided for convenient connections to serve future water consumers in the area south of the bay.

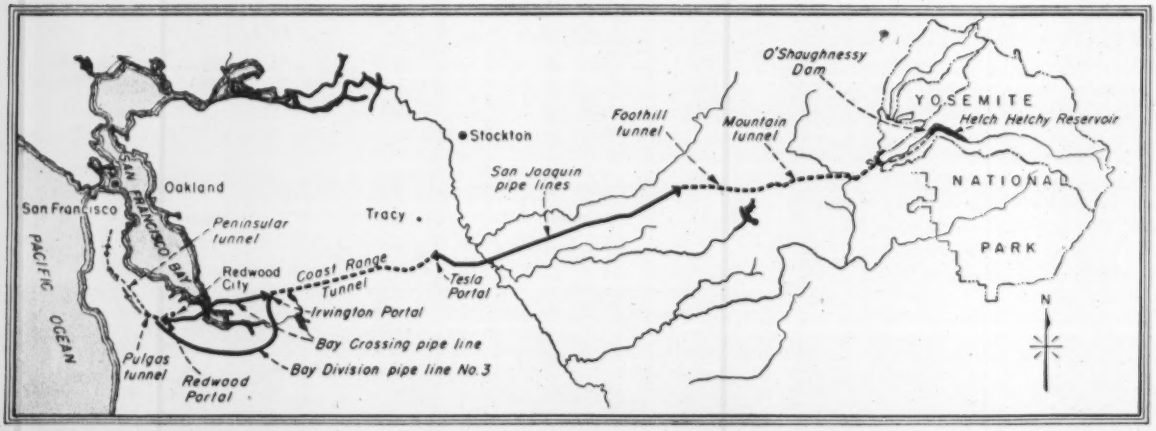
The new San Joaquin Valley line, which parallels the original line, started delivering 30 mgd of water the end of October. The 32.3-mi line has a constant diameter of 61 in. Like pipeline No. 1, it extends from the end of the Foothill Tunnel to the Coast Range Tunnel.

• **Repairs now possible**—Completion of the new line has permitted maintenance work on the original line. This included extensive cement mortar lining using the Centriline method. Pipe Linings, Inc., West Coast Centriline licensee, did the work under a $304,070-contract. The job was the most extensive Centrilining work in West Coast construction history.

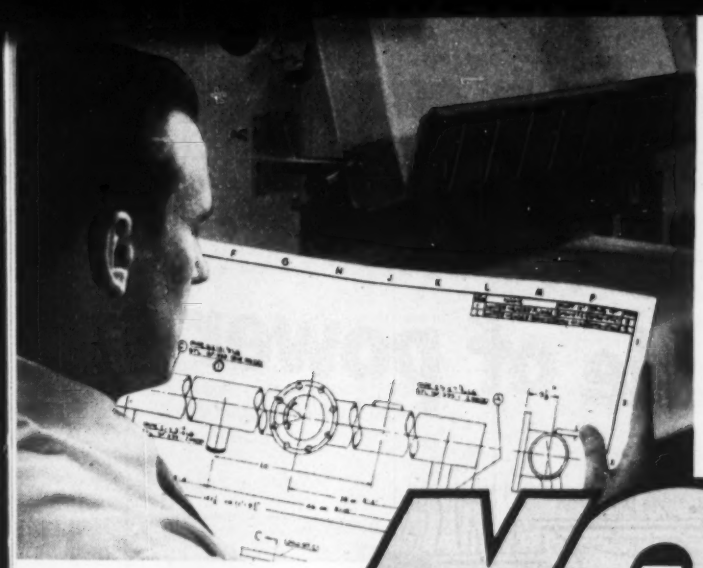
An 11-mi section was relined, from a point ½-mi west of the San Joaquin River to the Tesla Portal of the Coast Range Tunnel, 7 mi south of the city of Tracy. The job consisted of cleaning and placing a ⅜-in. cement mortar lining in 58-in. dia pipe for 7,200 lf, 62-in. dia pipe for 26,186 lf, 66-in. dia pipe for 23,309 lf, and 72-in. dia pipe for 458 lf.

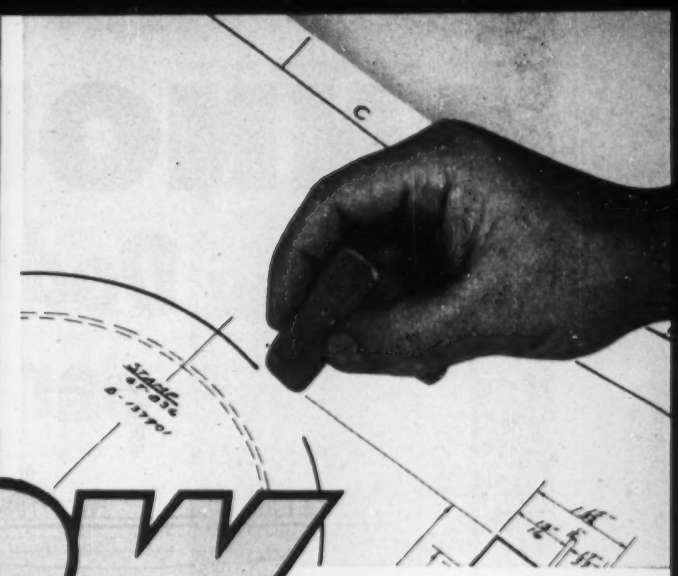
The contractor followed the standard methods of this system except for changes in batching methods because of the extent of the line; and in the curing of the lining.

Pipeline No. 1 is fabricated from steel plate with two longitudinal butt welded joints. In general, each sec-



SAN FRANCISCO'S WATER SUPPLY from the Sierras has been increased by addition of a second valley pipeline to the Hetch Hetchy Aqueduct and construction of a new line around south end of the bay. Work was financed by a $25-million bond issue.





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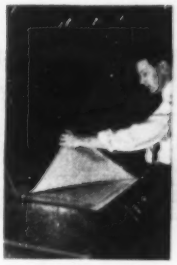

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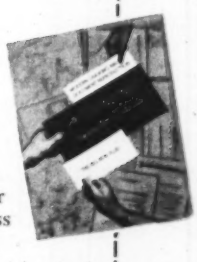

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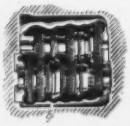
For a truck, ½-ton through 4-ton that fits the job, see the NEW...

NEW! Extra-powerful brakes!

Stop easily on steep grades, fully loaded. Super-safe brakes give silky-smooth braking, reduced driver fatigue, greater load protection . . . new increased stopping ability on 1- through 2½-ton trucks! *PLUS* Dodge's oversize braking surface with Cyclebond linings.



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tion of pipe has a die formed bell at one end and a plain end at the other. Joints between adjacent pipe sections were made by inserting a plain end into a belled end, and riveting. Straight sections of pipe are about 30 ft long.

The line was hydraulically cleaned, using a go-devil driven by water. Although the contract did not specify a bare surface, the machine took off most of the original asphalt dip coating, so the cement mortar was placed on a steel wall. The 72-in. dia portion was hand cleaned.

Scale and tubercles had reduced capacity, but the steel was found to be in good condition after cleaning. The line was designed for a capacity of 62 mgd, but actually carried 72 mgd when it was new. By the time the relining job was started, the flow had been reduced to 62 mgd. Tests now under way will determine the effect of relining on capacity.

To get his equipment and supplies into the pipe, the contractor cut 2x2-ft holes at three points between manholes, which are spaced at about 2,000-ft intervals.

• **Lining procedure**—In most Centriline jobs, all sand and cement is delivered in bags. Because of the size of this job, a new procedure was instituted. A skip loading setup was fabricated which allowed the use of bulk sand delivered to the job in 5-cu yd dump trucks. The sand was dumped by batch through a hopper to the skip loader, then carried up a ramp to the 12-cu ft mixer on the truck. After mixing, it was dumped through an access hole into the electrically operated mortar supply buggy, then delivered to the lining machine.

Cement was delivered in bags and stockpiled near access holes.

To reduce shrinkage, Hetch Hetchy engineers decided to replace 10% of the cement with a pozzuolanic material.

Another unusual feature of the job was the method of curing the lining. Partly because water was scarce, and partly because the crews were working downhill, the cement mortar could not be cured by the usual method of flooding the pipe and holding the water in place with bulkheads. A battery-powered curing buggy, on rubber wheels, was sent into the newly mortared section. It was equipped with a tank, and sprayed water on the lining to keep it moist enough for proper curing.

The pipe relining job was not paid for by the bond issue, but came out of Hetch Hetchy's earnings.

Sale of Greendale land halted by bid rejection

The federal government's plans to turn over to private ownership the Greenbelt village of Greendale, near Milwaukee, Wis., have been stalled.

The Public Housing Administration last week turned down all bids submitted for the purchase of 2,284 acres of undeveloped land and the shopping center at Greendale. The PHA declared that the bids were rejected because they were too far below the appraised value of the property, which figures, however, were not released by PHA.

Top bid of $738,600 was entered by the Milwaukee Community Development Corp.

Altogether, Greendale has about 3,410 acres of land within its village limits. Less than 200 acres of land has been built up.

Population of the village is about 2,800 persons in 661 families. Federally-built housing is lived in by 572 families, 31 families live in a privately-owned subdivision opened in 1946. Others live in homes already in Greendale when originally purchased.

The PHA's program of selling present Greendale dwellings to occupants was to be concluded sometime this year. With only five urban and 14 rural units left, the government had already sold $4.2 million worth of houses.

City's advisory vote to show tunnel sentiment

Backers of a proposed vehicular tube under San Diego Bay to connect the cities of San Diego and Coronado, Calif., began last week to circulate petitions for a "straw" vote on whether it should be built.

If sponsors get 600 signatures the Coronado city council must hold a special city election on the question. The result would be advisory only, but would carry strong weight with the governments of both cities. The San Diego city council has expressed a willingness to go into the subject.

Coronado residents voted against construction of a tube in January, 1952, at a similar advisory election. At that time proponents mentioned a cost figure of $28 million for the project, which would be about one mile in length. Opponents of the tube challenged proponents' $28-million cost figure as too low.

Bridging of the bay has been held to be unfeasible because of the volume of Navy shipping there, and the fact that both approaches are on low-lying land.

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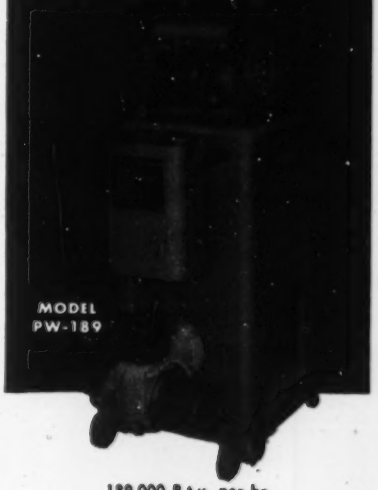

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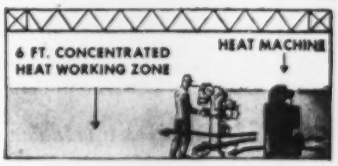

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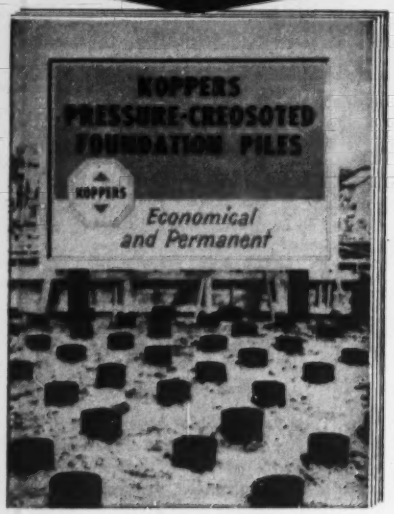


Here's a book every engineer should have. It's filled with interesting facts. Graphic descriptions. Photographs of modern construction projects, large and small, that are founded on pressure-creosoted piles.

An interesting book, yes—but informative, too. Case histories tell how substantial savings have been effected and unusual construction problems have been solved by founding permanent structures on creosoted timber piles.

You'll find this book a valuable reference. Send for a copy today. There's no obligation involved.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS PRESSURE-TREATED WOOD

LINKS BOROUGHS—Newly opened section of the Brooklyn-Queens expressway provides a rapid route from Williamsburg Bridge Plaza in Brooklyn to Queens (in the background) via the Kosciusko Bridge.

New link in Brooklyn-Queens route

Another section of the Brooklyn-Queens expressway in New York City was opened last month. The $3.2-million elevated section now open to traffic is a continuation of the Meeker Avenue Viaduct leading to Queens via the Kosciusko Bridge over Newtown Creek.

When completed, the expressway will extend from Gowanus Parkway at the Brooklyn Plaza of the Brooklyn-Battery Tunnel, through Brooklyn and Queens, connecting with the Grand Central Parkway a short distance east of Triborough Bridge. Construction of the 11-mi, 6-lane link between the two boroughs is under three different agencies. The center section is being constructed by the State Department of Public Works with federal aid; Borough President John Cashmore of Brooklyn is responsible for the southwesterly portion and Borough President James A. Lundy of Queens for the northerly section.

To facilitate early construction of the latest section, families in the path of the spur to the Williamsburg bridge were relocated first and the buildings cleared. Remaining buildings adjacent to the spur roadways are now being demolished preparatory to letting contracts for extension of the expressway toward the Manhattan and Brooklyn bridges.

In addition to providing a direct traffic route between Queens and Brooklyn, the new expressway will enable motorists to travel from Manhattan by way of the Williamsburg Bridge to Queens freely.

State water clean-up campaigns continue

Pennsylvania Deputy Attorney General J. Robert Trace, as counsel for the State Sanitary Water Board, has announced that unprecedented court actions will be filed against two municipalities for failure to comply with the state clean streams program.

The municipalities involved are Bridgeport, in Montgomery County and North Versailles Township, in Allegheny County.

"This will be the first time under the clean streams law," Trace said, "that we will go into court with a muncipality. The law already has been exercised against an industry but never against a political subdivision."

The state board said last June it would ask prosecution of 37 communities in the Susquehanna watershed, but Attorney General Robert E. Woodside intervened to give the municipalities more time to comply with the orders.

Punitive powers to enforce its orders

DIGGING — Contractor Del Balso of Bronx, N.Y., keeps his Model HM profitably busy. Here it's lowering grade for a new pavement . . . easily cutting the many tree roots encountered.

LOADING— Model HM doing a fast loading job on a dirt pile for Davis Construction Corp., Long Island. Fast reverse speeds and power boosted steering give this "PAYLOADER" high production on loading work.

BACKFILLING—A very popular "PAYLOADER" use is trench work — loading excess dirt and backfilling the trench. Tires do not injure pavements and the bucket can backfill over the top of sheeting or other obstructions.

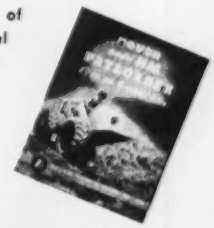
SPREADING — On the Penn-Lincoln Parkway near Pittsburgh, Frank Mashuda's Model HM spreads shoulder material while concrete pouring goes on beside it. Good tire flotation and maneuverability is an important HM asset here.

MASTER OF MANY JOBS

Big 4 wheel drive "PAYLOADER" tractor-shovels are capable *and* versatile — able to do *many* jobs and drive quickly from one job to another at speeds of 17 m.p.h. Big tires, plus 4-wheel-drive, gives them catlike traction and flotation to surmount poor ground conditions. Power boosted rear wheel steer makes them maneuverable and easy to handle . . . 4 gear ratios in each direction provide the right speeds to fit each task.

The powerful 1½ cu. yd. "PAYLOADER" is the flagship of the "PAYLOADER" fleet, which includes 7 sizes down to 12 cu. ft. bucket capacity. Also a choice of 4 wheel drive, rear wheel drive and front wheel drive to best fit your needs. Your Hough Distributor, one of 200 in the U.S. and Canada, is ready to serve you *right* — with extensive application experience and complete parts and service facilities. The Frank G. Hough Co., 772 Sunnyside Ave., Libertyville, Ill.

WRITE for full information on any of the "PAYLOADER" models: FourWheel Drive HM — 1½ yd. and HR — 1 yd.; Rear Wheel Drive Models HY — 1¼ yd., HF — ¾ yd., HE — ½ yd.; Front wheel drive Models HAH — 15 cu. ft., HA — 12 cu. ft.

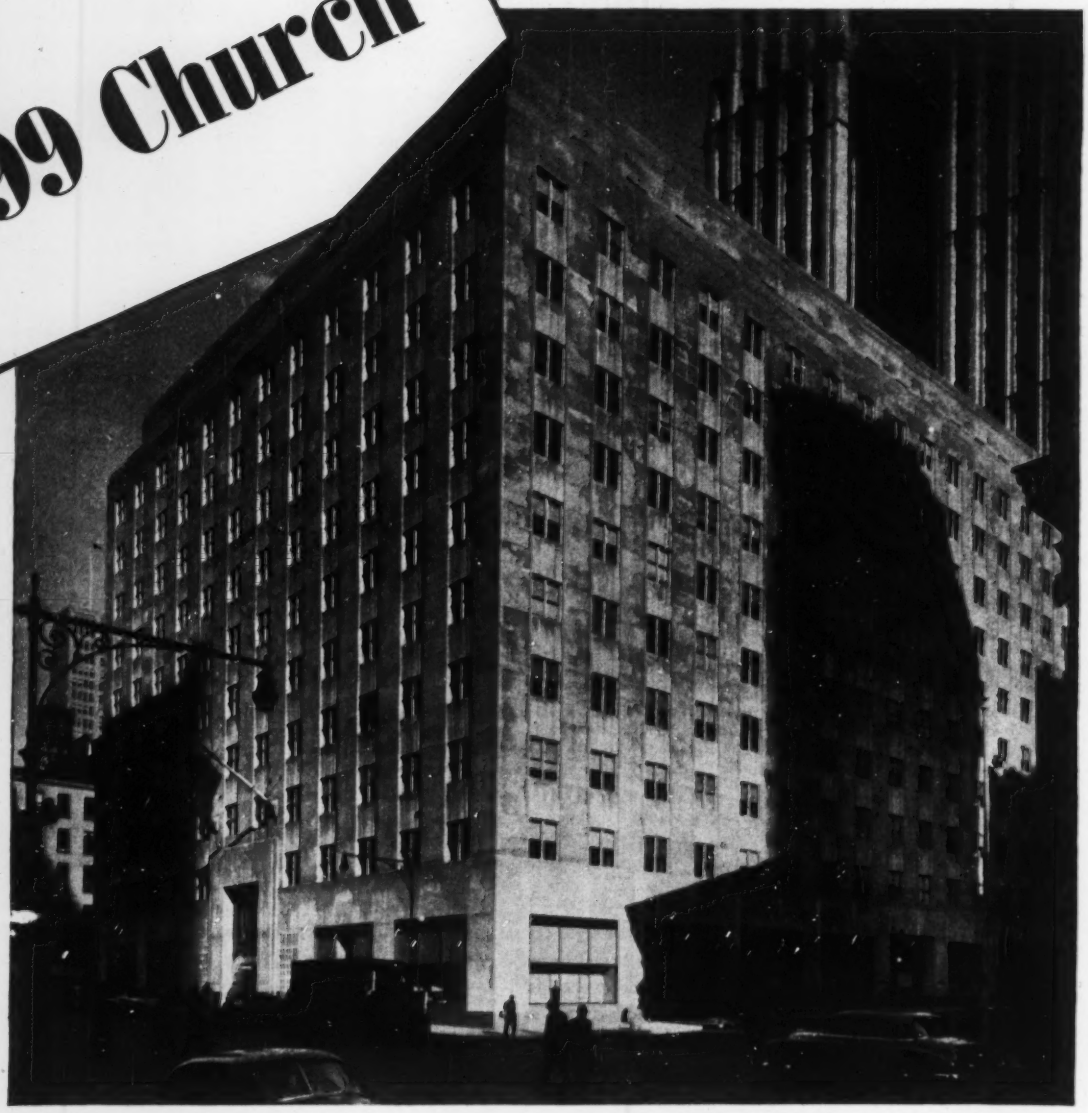


SAY "HUFF"

PAYLOADER®

"99 Church"

99 Church Street, New York, new home office of Dun & Bradstreet, Inc. *Architects:* Reinhard, Hofmeister & Walquist; *Structural Engineers:* Edwards & Hjorth; *Mechanical Engineers:* Syska & Hennessy, Inc.; *General Contractor:* George A. Fuller Co.; Steelwork by Bethlehem Steel Company.



Here's an address that may soon be one of the best known in downtown New York. It's 99 Church Street — the new home office building of Dun & Bradstreet, Inc.

This dignified office structure is 11 stories high, and measures 197 ft x 148 ft. It is completely air conditioned, has a penthouse and two basements, and 303,000 sq ft of usable floor space. It has the largest moving-stairway installation in any New York office building, its main basement and lower five floors being serviced by twelve dual-direction stairways.

The Dun & Bradstreet Building has lobby entrances from Church Street, Park Place, and Barclay Street. It practically abuts the Woolworth Building, and is convenient to all forms of transportation.

The exterior of "99 Church" is of limestone. Bronze is used at the main entrance and store fronts. The steel framework, weighing approximately 3900 tons, was fabricated and erected by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL CONSTRUCTION

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were given the board in 1945 and subsequently were upheld by the State Supreme Court.

• **Connecticut clean-up plans**—Another state also was making pollution news. Broadening its program for valley-wide pollution abatement, the Connecticut State Water Commission last week designated the Hockanum River Valley as its next clean-up target.

The agency announced it would set target dates for completion of adequate sewage treatment plants in the four communities and by 10 industries now polluting the river. State law will require the municipalities and industries to comply with the deadlines.

Affected by the Hockanum Valley clean-up project are the towns of Rockville, Manchester and East Hartford, and the community of North Manchester, together with industries in the valley.

The Hockanum Valley project is the second in the commission's new program for valley-wide pollution control.

Dallas water shortage surveyed by engineers

Contract negotiations have begun between the city of Dallas, Tex., and the Houston engineering firm of Lockwood & Anderson for a projected survey of Dallas' emergency water needs.

The water-short city first asked Freese & Nichols of Fort Worth to make the survey, but that firm declined because it does water engineering for Forth Worth and the needs of the two cities might clash.

A special committee named by the Dallas city council also suggested that E. W. Steele, professor of sanitary engineering at the University of Texas, and William F. Guyton, ground water hydrologist of Austin, also be employed for the survey.

The council recently asked that engineers from outside Dallas make the survey after plans to tap the West Fork of the Trinity River were dropped because of the excessive pollution of the river. (ENR Nov 6, 1952 p51)

As counter-drought measures, the city is drilling a series of deep wells, tapping water from White Rock and Bachman lakes inside of city limits and using water from several privately-owned wells.

Water Superintendent Karl Hoefle said the city has eight months' supply left—without calculating rainfall. This figure, of course, is based on reduced consumption. The Army Engineers two months ago said the city had only four months' supply.

Proof of Top Preference for

WISCONSIN HEAVY-DUTY Air-Cooled ENGINES

Based on data contained in a "Facts for Industry" report released on Sept. 5, 1952 by the U. S. Bureau of the Census, an aggregate average of 50.61% of all carburetor type internal combustion engines produced during 1950-'51 within an 11 to 175 cu. in. displ. range (approx. 3 to 40 hp.) were WISCONSIN HEAVY-DUTY AIR-COOLED ENGINES (exclusive of aircraft, automotive, outboard marine and "captive" engines built by various manufacturers for use on their own equipment).

Here is positive proof of top preference for Wisconsin Engines both by original equipment manufacturers and users of power-operated equipment. Proof of constantly growing recognition of the special adaptability of these fine engines to fit both the machine and the job. Proof of heavy-duty dependability and trouble-free air-cooling under weather and climatic extremes.

Wisconsin general-purpose Air-Cooled Engines have been *pre-judged* and *pre-selected* by more power-wise purchasers than ALL other makes of engines combined, within a 3 to 40 hp. power range. Perhaps it's your turn to specify "Wisconsin". Descriptive literature and engineering data on request.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

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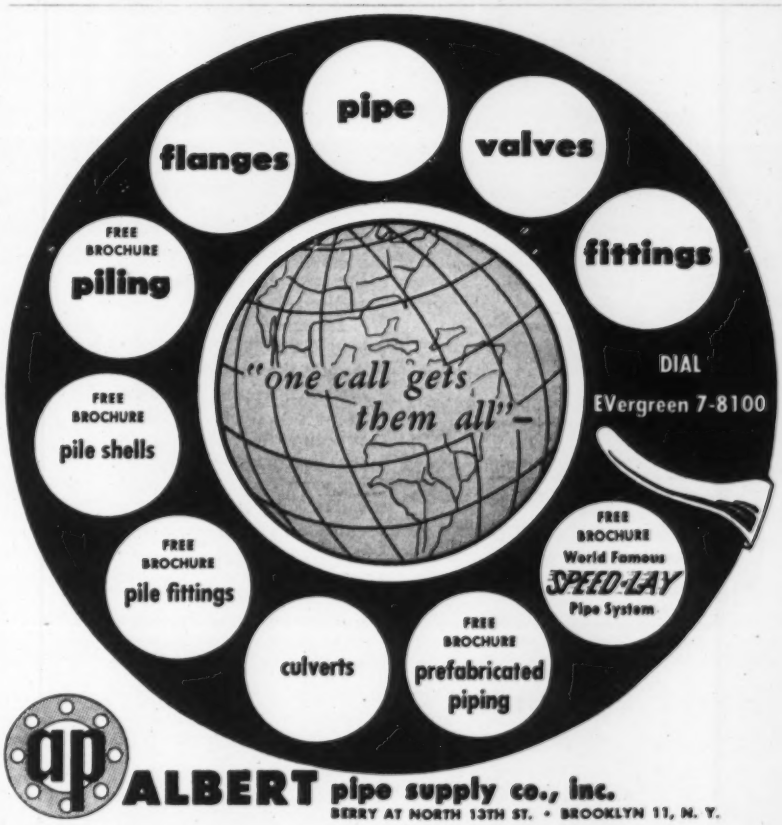

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Rud-O-Matic Taglines are made in 8 models for all bucket sizes, and are supplied with cable and installation equipment. *Immediate delivery from your nearby equipment dealer – or send coupon below for details.*

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AIRPORT HIGHWAY TUNNEL bores under two runways and two taxiways for 1,910 ft.

Highway tunnels under runways

As of mid-March, Los Angeles International Airport will be one of the few airports in the country with a highway tunneling under its principal runways.

The tunnel–six lanes wide and 1,910 ft long–results from runway extensions to cope with greater traffic and heavier planes. It runs along the route taken by Pacific Coast Highway –U. S. 101–prior to 1946, when that was the field's western limit.

The tunnel runs beneath the airport's two main runways and two taxiways. (Because of prevailing winds, long runways need be provided only in the east-west direction.) In order to keep one runway open at all times, the basic tunnel was built in two half sections.

Designed to take a 400,000-lb live load (100,000 lb above CAA requirements) the tunnel is solid slab on reinforced concrete rigid frame. It's in two spans–an open column and girder structure gives intermediate support to the frame and divides separate roadways of three lanes each plus sidewalks. Three turn-outs have been provided on each side for emergency stops. The turn-outs, 40 ft long, plus lead-ins, and the equivalent of one lane in width, were designed to accommodate large truck-trailer units.

Banks of fluorescents in the first three construction sections at either end graduate light from 80 ft-candles down to the incandescent level, to help motorists accommodate on leaving sunlight.

• **Ventilation**–Ventilation will be through an automatically controlled transverse system of forced air supply and exhaust. Supply ducts run under the inside edges of both roadways, with vents just above curb level at either side of each support column.

Small buildings at either end of the tunnel house ventilating equipment. Each has two exhaust and two supply fans, which are controlled in pairs, so that in each quarter supply and exhaust are controlled simultaneously. Normal capacity of each fan set is 187,500 cfm; emergency capacity is 225,000 cfm.

Each ventilation building will have two carbon monoxide analyzers and one analyzer-calibrator. The analyzers will operate continuous-recording potentiometers, which will control multiposition torque motors. These will position speed control levers of hydraulic couplings to give required fan rpm. Tunnel atmosphere will be controlled to a maximum of four parts of CO in 10,000.

To permit work to begin before completion of final detail specifications on paving ventilation, etc., the job was let in two contracts, the first including just that portion of the work necessary to complete the tunnel to the point where use of runways could be restored permanently. Oberg Brothers Construction Co. was low bidder on both contracts, for a total sum of $2,995,367.

Federal money from the Airport Aid Act through CAA provides 54% of the funds for the project, with the other 46% coming from a city airport bond issue voted in 1945.

Telsmith Scalper and 13-B Gyratory Crusher

Telsmith Gyrasphere Crusher

Telsmith Vibro-King Sand Screen, Telsmith Super-Scrubber, Telsmith Sand Classifier

Combination GRAVEL AND QUARRY PLANT

FOR MAY SAND & GRAVEL CO., FORT WAYNE, IND.

ENGINEERED by TELSMITH

TELSMITH Equipment in this Plant

- 4′ x 10′ Single Deck Scalping Screen
- 13-B Gyratory Breaker
- 4′ x 12′ Double Deck Vibro-King Sand Screen
- 84″ x 12′ Super-Scrubber
- 30″ x 25′ Twin Screw Sand Classifier
- 4′ x 12′ Triple Deck Vibro-King Coarse Aggregate Sizing Screen
- 36-S Gyrasphere Crusher

● May Sand & Gravel Co. supplies the Fort Wayne, Indiana area with a variety of aggregate — for state highway use, ready-mix concrete, railroad ballast, etc. This versatile, flexible, combination plant with about 200 tons per hour capacity, was designed by Telsmith engineers to process a sand and gravel deposit located over a workable quarry. Three sizes of stone, and two sizes of sand can be made at the same time. Its 13-B Telsmith Gyratory Breaker and Telsmith 36-S Gyrasphere do all the crushing — now making minus 3½″ plus 2″, minus 1¼″ plus ¼″, and minus ¾″ plus ¼″ gravel and stone. In addition to concrete sand, either mason sand, or bituminous mix sand can be made. ● Telsmith planned plants pay profits. Get Bulletin 266.

GQ-2

SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

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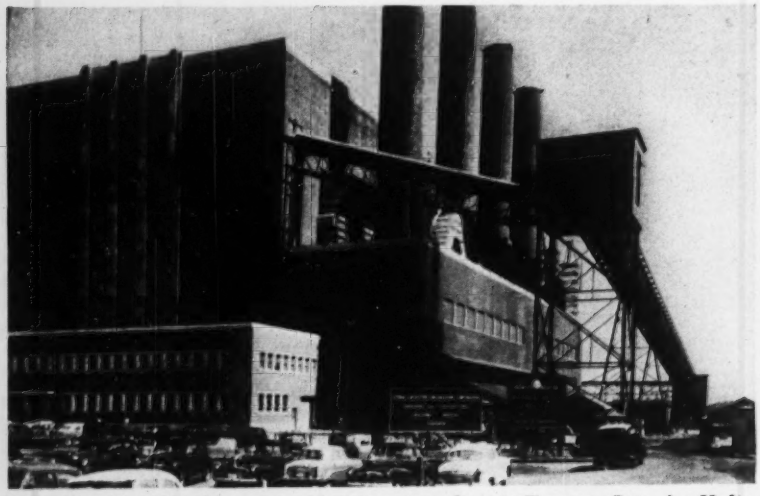
Marenz Eqpt. Co., 432 Main St., Rochester, Mich. ● Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash. ● Mines Eng. & Eqpt. Co., San Francisco 4, Calif.

Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. ● Interstate Equipment Co., Statesville, N. C.



JOBS like this $50-million steam electric power plant in Toronto, Ont., for Hydro-Electric Power Commission of Canada help explain why . . .

U. S. firms open Canadian offices

In increasing numbers, U. S. engineering and construction firms are opening offices in Canada.

Within the last year, several new firms opened offices at Montreal and Toronto, to continue a trend that has been growing rapidly. Many organizations that went north to do specific jobs during and immediately after World War II now have Canadian subsidiary companies. Today, U. S. engineering-construction companies are handling some of the biggest projects in Canada, most of them in connection with mining, oil and hydroelectric power developments.

Many of the new Canadian companies keep contact with their parent offices south of the line for engineering operations, but some have now built up engineering departments in Canada employing young Canadian engineers. On the job, key personnel are usually engineers sent to Canada from the United States. A few of the Canadian companies are incorporated in the United States to take advantage of the tax arrangements under western hemisphere development programs.

Some of the leading U. S. contractors operating in Canada are:

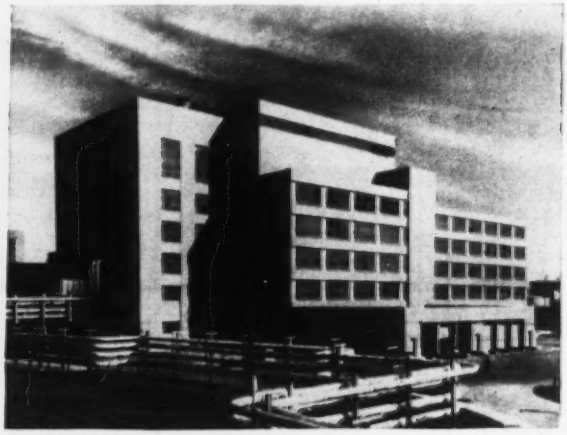
• Newest of the Canadian subsidiary companies is Arthur G. McKee of Canada Ltd., with offices at Toronto, where R. A. Westervelt, a Canadian, is in charge. As yet the company has no engineering department in Canada. It opened its Toronto office in September since many big natural resources development companies have their head offices at Toronto; and is now installing a blast furnace and open-hearth plant for the Steel Co. of Canada, Hamilton, Ont., and a blast furnace and a sintering plant for Algoma Steel Corp., at Sault Ste. Marie, Ont. McKee expects to enter the oil and petro-chemical field.

• In April 1952, Chemical Construction (Inter-American) Ltd., opened an office at Toronto, with W. P. Jones, a civil engineer, as general manager. He has been with the parent company, Chemical Construction Corp., New York, for 12 years. The company has, at present, 65 engineering employees, of whom seven are U. S. citizens.

Most of Chemical's work is metallurgical, and it is at present busy with two major projects in Canada. At Fort Saskatchewan, Alberta, it is building a nickel refinery for the Lynn Lake nickel deposits of Sherritt-Gordon Mines Ltd., a $17-million project, and at Niagara Falls, Ont., it is building a $4-million sulfur and iron refinery for a new process of Noranda Mines Ltd. and North American Cyanamid Ltd.

• In September, 1951, the engineering firm of Spencer, White and Prentis opened an office in Toronto and later, one at Montreal. The company is at present constructing a water intake project at Oakville, Ont., on Lake Ontario, the new assembly plant of the Ford Motor Co. of Canada. It has recently completed two underpinning and foundation jobs at Calgary and Montreal for big industrial build-

$12-MILLION Sick Childrens Hospital in Toronto.



$10-MILLION Lever Bros. plant in Toronto.

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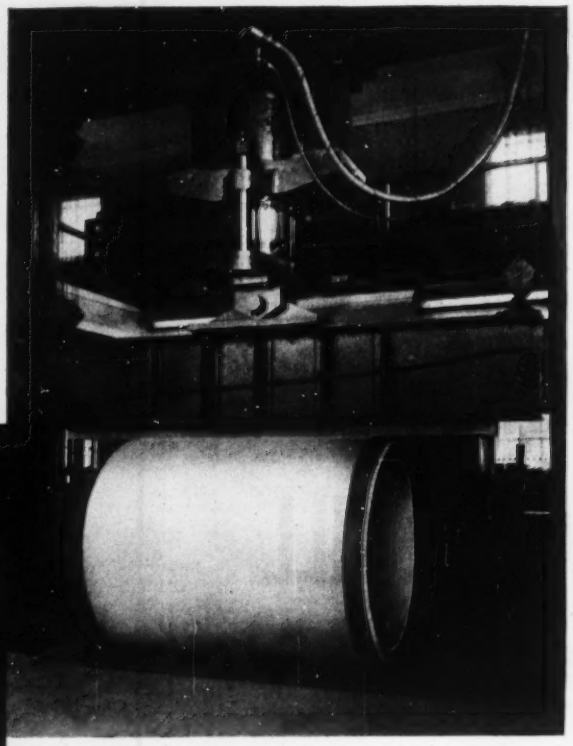
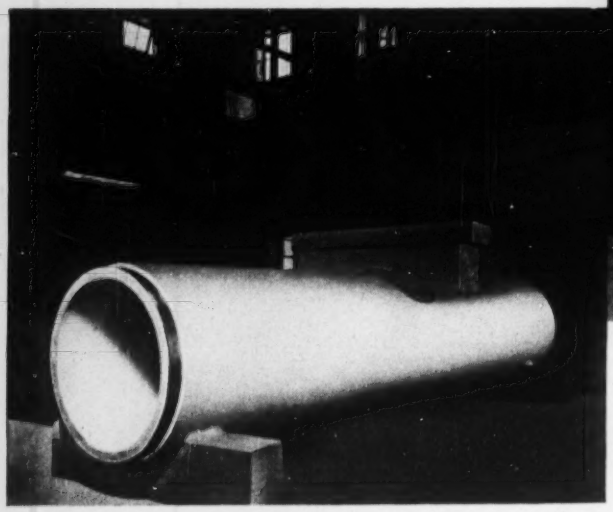
test after test assures the best

IN LOCK JOINT CONCRETE PRESSURE PIPE





▲ *Three edge bearing test in 300,000 pound capacity testing machine.*

◀ *Determining a pipe's beam strength in 300,000 pound capacity testing machine.*

Do you have conclusive proof of the fundamental characteristics of the pipe you intend using in your next water works project? Are you certain of its advantages? Do you recognize its limitations?

• • •

In Lock Joint's laboratory at Wharton, N. J. all guess work has been eliminated. Here, Lock Joint Pipes of all types and designs are tested to determine the exact extent of their ability to withstand back loads, beam loads and internal pressures. The most efficient modern equipment in the hands of highly trained personnel is used to give a tangible, practical demonstration of the high quality built into every type of Lock Joint Pipe.

• • •

These constant tests of our products are your assurance that, in its field, no finer pressure pipe than Lock Joint can be produced. Built in diameters from 16″ upward and designed for any pressure common to water works practice, these pipes will serve you unfailingly for generations.

SCOPE OF SERVICES—*Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains 16″ in diameter or larger, as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.*

LOCK JOINT PIPE COMPANY

Established 1905

P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich., Columbia, S. C.

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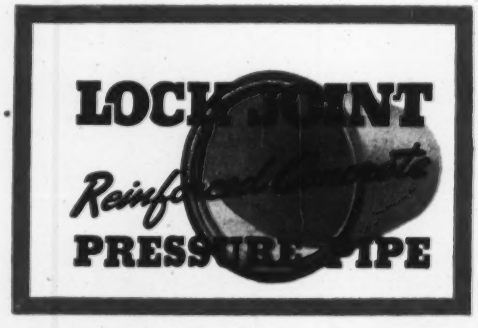

ALFRED T. KROOK, president of Stone & Webster Canada Ltd.

ings. Manager at Toronto is J. C. Nelson, formerly of Raymond Concrete Pile Co., Los Angeles.

• Handling the power development work on the big Aluminum Co. of Canada project in British Columbia is the Morrison-Knudsen Co., of Canada Ltd., Vancouver. It is closely allied with a number of western Canadian construction companies to whom it has sub-contracted some of the work on this big project.

• In 1950 Stone & Webster Canada, Ltd., was formed, with offices at Toronto. Alfred T. Krook, formerly of Houston, is president. Vice-presidents are: P. B. Scott, L. J. Towne, who is also construction manager, and L. L. Youell, a Canadian who spent a number of years in the United States before returning to Canada.

Prior to incorporating a Canadian company, Stone & Webster had many years of experience in Canada, starting before World War II with work on power plants, a pulp and paper plant and a Canadian government synthetic rubber plant at Sarnia.

Postwar, the parent company and later the Canadian company has built or managed construction on several major projects including the Toronto Sick Childrens Hospital; a finishing plant for Lever Brothers Ltd., Toronto; a steam electric power plant at Toronto for the Ontario Hydro-Electric Power Commission.

• Many U. S. companies went in to take part in Canada's oil development, but not many have remained to form Canadian organizations.

One that stayed is Canadian Bechtel Ltd., with offices at Toronto, Vancouver and Edmonton. S. M. Blair,

DELIVERING an average of more than 4,000 cu. yds. of solids per working day, this big Ellicott 12″ hydraulic dredge saw plenty of action on a recent New Jersey road project. A total of 250,000 cu. yds. of wet material was removed, then 600,000 cu. yds. of approved fill was deposited for the road bed. Job report reads: "The project, which required the dredge to be moved overland from one site to another several times, was completed in just 8 months!"

Ellicott dredges are built for long-range, profitable service under all types of conditions . . . built to *outperform all others on every basis!* For more information, write for Catalog 825. Address: ELLICOTT MACHINE CORPORATION, 1603 Bush Street, Baltimore 30, Md.

GET HIGH EARLY STRENGTH WINTER CONCRETE

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Standard Cement

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SOLVAY Calcium Chloride

- Provides Additional Cold Weather Protection
- Permits Positive Control at All Temperatures
- Assures High Ultimate Strength
- Avoids the Need for Special Cement
- Includes "Built-in" Curing
- Lowers Your Costs

To speed up operations and permit use of concrete in shorter time—especially in cold weather—add Solvay Calcium Chloride to your Portland Cement concrete mixes. Works equally well with all Portland Cements, including standard, high early, air entrained and low heat cements. It helps lengthen the pouring day and cuts costly protection time in half.

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"The Effects of Calcium Chloride on Portland Cement" is filled with important information and answers to your questions about the use of Calcium Chloride in concrete. For your free copy, write on your business letterhead to Dept. ENR-1.

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Be Sure to Specify Concrete with

SOLVAY

CALCIUM CHLORIDE

a Canadian oil engineer, is vice-president of the Canadian operation.

The parent company had undertaken a number of Canadian projects prior to formation of its Canadian subsidiary in 1949. Best known of these was the World War II Canol project in the Canadian sub-Arctic. Since formation of the Canadian company, it has taken a part in the construction of the 1,200-mi oil pipeline from Edmonton to Superior, Wis., a $90-million project completed last year; is constructing an oil pipeline 700 mi across the Rocky Mountains from Edmonton to Vancouver, an $86-million project, and is building an oil refinery at Vancouver for Imperial Oil Ltd., Toronto.

J. P. Wiseman, formerly vice-president and director of sales of the Fluor Corporation, Ltd., Los Angeles, has been elected president of the newly activated Fluor Corporation of Canada, with offices in Toronto.

The firm will handle engineering, design and material procurement on all Fluor's new projects in Canada. The company is building facilities for Shell Oil Co. at Vancouver, and Imperial Oil, Ltd. at Regina. Fluor also manufactures prefabricated cooling towers at Vancouver, B. C.

• **Syndicate**—When Toronto began building the first Canadian rapid-transit subway in 1949, a syndicate of three American and one Canadian contracting firms was awarded sections of the $45-million project. The syndicate, Pitts, Johnson, Drake & Perini, is now on the last section of its contract, but has gone into other jobs: At Lynn Lake in northern Manitoba it is constructing a railway to a new nickel mine; and at Niagara Falls, Ont., where it is taking part in excavating tunnels for the Ontario Hydro-Electric Commission's new power development. In charge of the subway project has been C. B. Molineaux of Arthur Johnson & Co., of New York. The Johnson firm is in on two other projects in Canada, and B. Perini & Son, Framingham, Mass., is opening a Canadian office for other projects. This last-named firm is handling the tunneling work at Niagara Falls.

• **Proposed offices**—Other American firms understood to be planning offices in Canada include M. W. Barnes Co. of Los Angeles, and C. F. Brawn Co., which has done work in western Canadian oil. Foster-Wheeler Co. of New Jersey, has an office at St. Catherines, Ont., specializing in the erection and design of boilers and heating plants.

J. P. WISEMAN, new president of Fluor Corp. of Canada.

• **Veterans**—In Canada for many years have been: The Austin Co., Ltd., with offices at Toronto and Windsor, Ont.; and Canadian Kellogg Ltd., Toronto, which also has a fabricating shop at Edmonton, Alta. American engineers H. W. Wurdemann and H. W. Hollingshead, general manager and assistant general manager, respectively, at the Toronto office of Canadian Kellogg Ltd., have been in Canada for many years. Canadian Comstock Co. is presently established as a wholly owned Canadian company. Formerly it was the Toronto branch of Comstock Co. of New York.

British steel plant grows despite uncertainties

Despite shifts in government that have made its status uncertain, the now-nationalized British steel industry is rapidly nearing its goal of boosting its output from 12,750,000 to 20,000,000 tons annually.

The program was launched in 1946—before a Labor government nationalized the industry—and it has continued under financing by funds subscribed by the steel companies themselves and private investors. To date, nearly $840 million has been invested in the expansion work, and a like sum will be put in to bring the program to completion.

As of the present, steel capacity—because of open-hearth furnaces, rolling mills, coke ovens and other appurtenances added in the expansion program—is rated at 17,250,000 tons. The remaining approximately 3,000,000 tons of capacity will be added in the next five years.

Photo courtesy Tucker Sno-Cat Corporation, Medford, Oregon

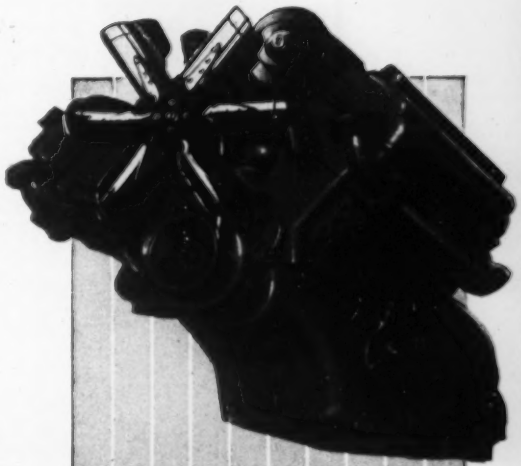
Snow, deep and powdery, on his favorite slope may be cause for rejoicing to the skier. But, to the men who must keep 60,000 volts of electricity crackling through ice-crusted lines in the high Sierras, to the men who must keep the lines of communication and transportation open to the West Coast . . . snow in any form spells possible trouble.

When the going is toughest, mountain men turn to their best friend, the Tucker Sno-Cat. These four-pontoon, full-track vehicles carry men and equipment *over the snow*—in minutes—to trouble spots it might otherwise take days to reach.

The 180 horsepower Model 20 Chrysler V-8 Industrial Engine gives the Sno-Cat extreme power without increase in weight, while Chrysler gyrol Fluid Drive and automatic transmission provide smoother, faster application of power to the double-drive axles. This combination is ideal for uses which require a powerful engine that will not stall under heavy loads and at the same time require an engine and transmission protected against the wear and tear of sudden starts and stops.

For greater power and economy in your equipment, check the two new Chrysler V-8 Industrial Engines as well as the seven six-cylinder models. See your Chrysler Industrial Engine Dealer for detailed information, or write: ***Dept. 71, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

180 horses . . .
man's best friend
in the
wintry high Sierras



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HORSEPOWER WITH A PEDIGREE

Here's a new concept in light-weight

Engineered weight

designed to give you

PRECISION BUILT, two-compartment water tank assures accurate water measurement—even when mixer is not level.

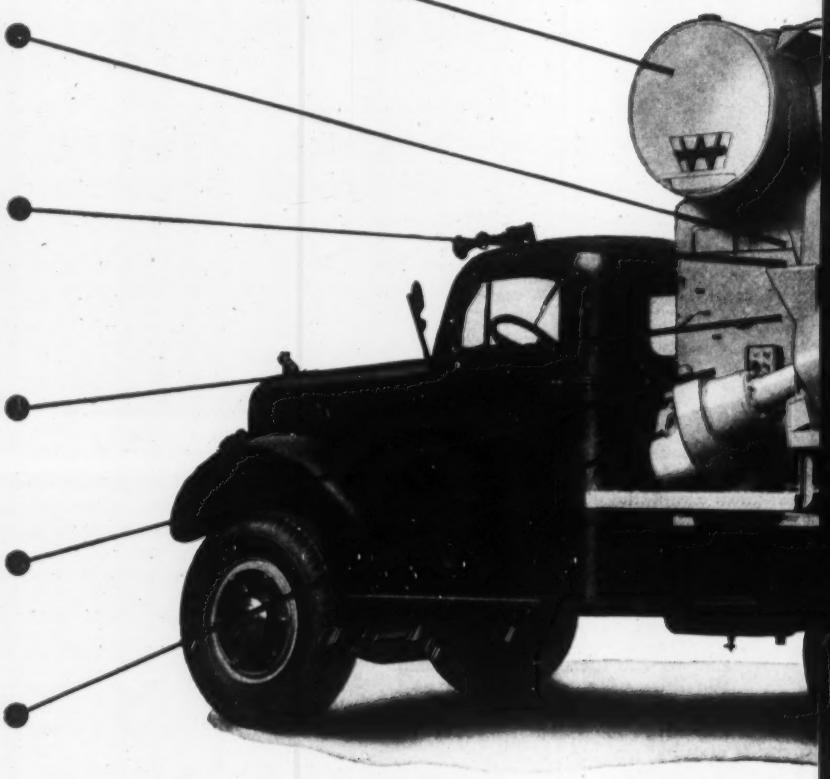
SPECIAL STEEL DRUM SPROCKET of unusually large diameter reduces torque, minimizes effects of starting and stopping with heavy loads.

DRUM SPROCKET SEAT, tire and drip ring end are machined *after* all welding is completed—thus eliminating possibility of heat distortion. Drum runs absolutely true.

WORTHINGTON-DESIGNED Timken-equipped trunnion bearing offers maximum flexibility.

HIGH CAPACITY, double V-belt-driven Worthington water pump, equipped with efficient disc-type clutch.

HEAVY-DUTY TRANSMISSION is designed and built by Worthington. Forward and reverse clutches and brake are completely enclosed and run in oil. Single lever operation.



The new Blue Brute Truck Mixers are the product of nearly a century of mixer building experience.

Weight distribution has been engineered so that the center of gravity is well forward of the rear axle—enabling you to carry the maximum legal payload.

Rigid field and factory tests assure you of trouble-free operation and easy maintenance—with all parts requiring maintenance readily accessible.

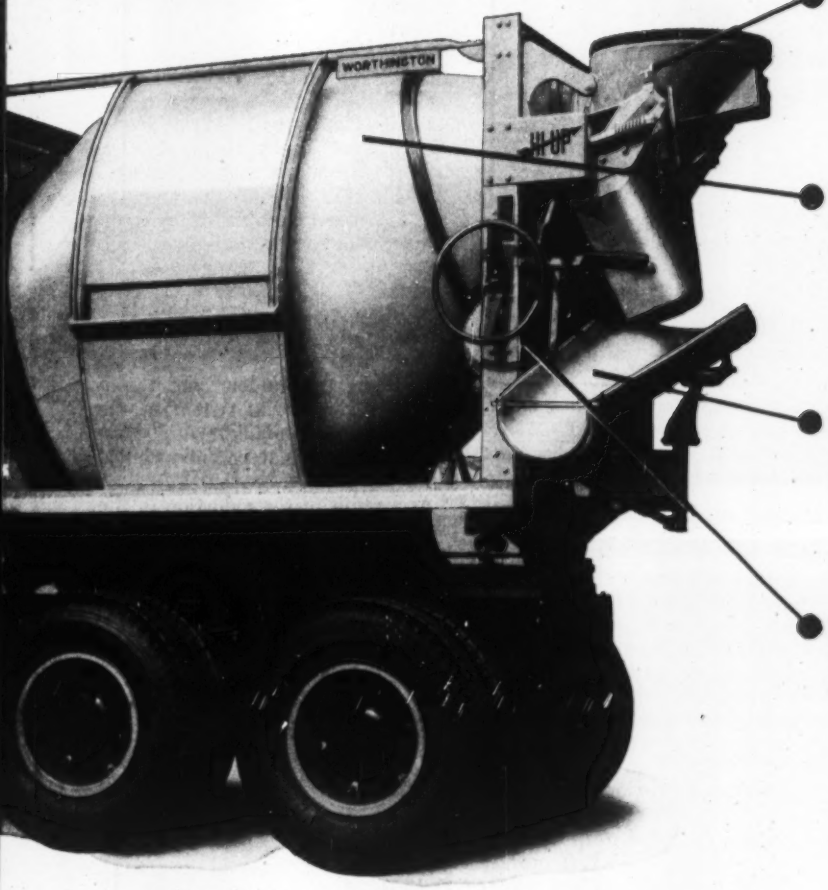
The modern Blue Brute is available in capacities of 3, 4½, and 5½ cubic yards, with respective agitator ratings of 4¼, 6⅛, and 7⅜ cubic yards.

Learn more about the new Blue Brute—the truck mixer that is the ideal combination of light weight, strength, and durability. Write your nearest Worthington Blue Brute distributor or Worthington Corporation, Construction Equipment Division, Plainfield, New Jersey.

truck mixers . . .

distribution—

maximum legal payloads



FAST CHARGING HOPPER is equipped with the simplest, easiest to operate control available—no chains, worms or sprockets.

AUTOMATICALLY WELDED, overlapping drum joints for greater strength at drum seams.

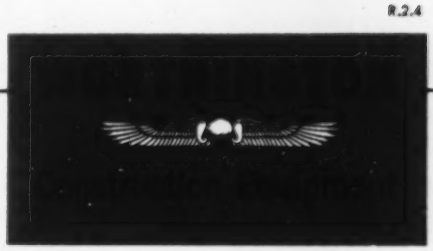
LIGHT-WEIGHT, STRONG, die-formed distributing chute is shaped to permit unobstructed flow of concrete.

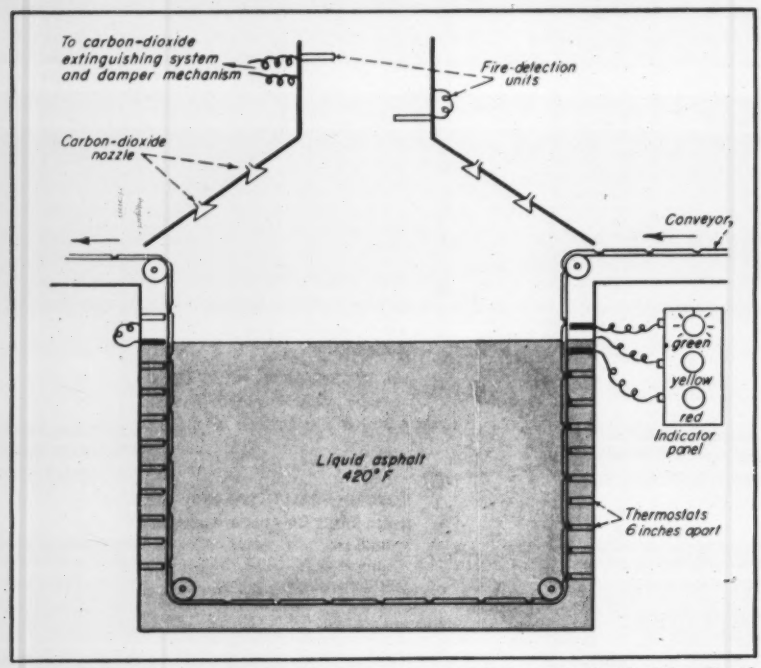
CHILLED-FACE DRUM ROLLERS are self-cleaning and thoroughly sealed against dirt. High-carbon, deep section drum tire is automatically welded to drum.

FULLY EQUIPPED, the 4½ cu yd closed end Blue Brute truck mixer weighs less than 6800 lbs. The open end mixer (same capacity) weighs less than 6200 lbs.

R.2.4

If It's A Construction Job, It's A *BLUE BRUTE* Job





ASPHALT TANK is equipped with thermostats that indicate the level of hot liquid. Plant men connect three thermostats to an indicator panel, depending on the liquid level required. Each of the three thermostats selected extinguishes its corresponding pilot light when covered by the hot liquid, thus indicating the liquid level.

Thermostats show level of asphalt

An ingenious use of thermostats solved the problem of keeping a continuous check on the operation of a liquid-level controller in a hot-asphalt tank and of giving a positive visual alarm in case the controller fails to function. The thermostats were adopted because high temperature and extreme viscosity of the asphalt interferes with the operation of most level indicating instruments.

This system of level indication was devised by engineers at the Flintkote Co., East Rutherford, N. J., for use in a 15-ft. deep dip tank in which insulated siding is saturated with liquid asphalt at about 420 F.

As shown on the accompanying figure, two rows of thermostats, each containing eleven units spaced 6 in. apart, are mounted on opposite walls of the tank. Rows are staggered vertically so that liquid level is actually measured at 3-in. intervals.

The thermostats, manufactured by Fenwal Inc., Ashland, Mass., are connected to a set of three pilot lights. By means of prong-type connectors, the plant men can connect any three thermostats to the three pilot lights, depending on which liquid level is required for a particular operation. The height of the liquid level is varied to govern the amount of penetration of the saturant in the siding material, inasmuch as the siding picks up the asphalt by passing vertically down one side of the tank and up the other.

The thermostats follow the position of the liquid level by responding to the temperature of the asphalt and are set at approximately 375 F to operate the pilot-light circuits. When a thermostat is submerged in the hot asphalt, its contacts are open; when the liquid level falls, the contacts close.

High heat and high viscosity do not impair the operation, because the switch mechanism is enclosed entirely within the cylindrical outer shell of the unit. Moreover, since the unit has an adjustable setting range of 500 F and is constructed to withstand sizable temperature overshoots without adverse effect, it could be used safely for this continuous high heat application.

Another safety feature of the Flintkote installation is the use of an automatic carbon-dioxide extinguishing system. The top of the tank is enclosed by a hood which is equipped with a ventilating duct and fan for drawing off the hot asphalt fumes.

Concrete canopies pay for themselves

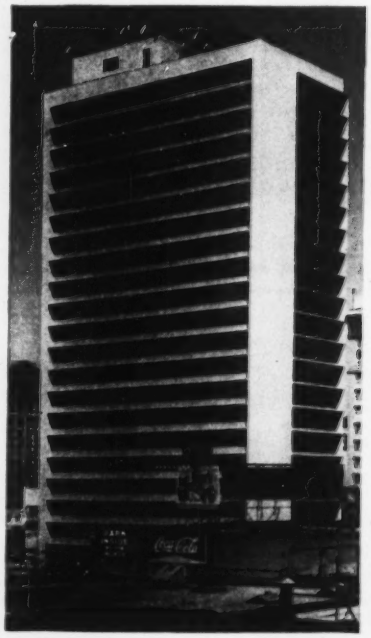
Operating costs for the air-conditioning system of the 21-story Melrose Building in Houston, Tex., are being sliced $10,000 per year—about 30%—through the use of concrete canopies above the windows to keep out the sun.

Projecting out 3½ ft, the canopies shade 1,100 windows on the south and east faces of the building. There are no windows on the west side, and only a few, recessed in a court, on the north.

The spandrel walls above the canopies are faced with turquoise-colored tile.

Air conditioning, designed by Herman Blum, consulting engineer, Dallas, Tex., consists of a high-velocity system serving separately controlled units under the windows and a conventional low-velocity system in the interior of the building. A 600-ton refrigerating machine produces chilled water for cooling.

As a result of the reduction in the heat load, Lloyd & Morgan, the architects, estimate that the saving on air conditioning will pay for the canopies in five years.



Pipe for First Barrel of San Diego Aqueduct... Installed in 1945-46. American Pipe and Construction Co., supplied 114,340 ft. of 72" Lock Joint and 42" Lock Joint reinforced concrete pressure pipe for heads ranging from 50 to 550 ft.

Do you know how much water your community will need 50 YEARS FROM TODAY?

DO YOUR PRESENT MAIN WATER SUPPLY LINES HAVE THE PERMANENCE AND SUSTAINED HIGH CARRYING CAPACITY TO MEET THAT DEMAND?

All community water engineers know that the growth of a city, town or village and the water demands that will be made in 10, 20 or 50 years are extremely hard to calculate or predict. Many engineers find a partial solution to this difficult problem by specifying American Reinforced Concrete Pressure Pipe with its advantage of *sustained* high carrying capacity.

SAN DIEGO... A TYPICAL EXAMPLE

The unexpected growth factor is exemplified at San Diego, Calif. The San Diego Aqueduct was installed in 1945-46 to serve the cities, population centers, agricultural areas, and military installations within San Diego County. At that time, prior to the Korean outbreak, engineers provided for a Second Barrel, to be installed in the future. Today, *only 6 years later,* contracts have been let for that second barrel . . . a facility demanded by San Diego County's increasing and unprecedented water demands, created by phenomenal growth and expansion. The second barrel will be installed soon . . . much sooner than anyone expected in 1946.

The San Diego Aqueduct is only one of the prominent examples of the long range point of view required on water supply projects. Specifying a class of pipe which forestalls the danger point at which demand exceeds supply is a part of the solution to the problem of unexpected growth.

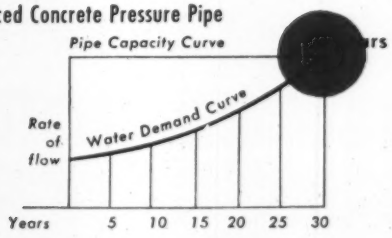
The products manufactured by American Pipe and Construction Co. . . . four different types of reinforced concrete pressure pipe . . . are intended and carefully designed for use in such permanent main water supply line projects. American reinforced concrete pressure pipe assures sustained high carrying capacity as illustrated graphically in the accompanying diagrams.

LET OUR EXPERIENCE HELP YOU

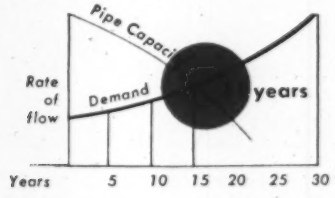
Our 50 years of experience in design and manufacture . . . and our continuing program of research and development in this field . . . are available in helping your community plan its water projects wisely.

Direct your inquiries to any of our plant offices, and be assured of an immediate reply . . . plus informative bulletins on the type of reinforced concrete pressure pipe that will best meet your needs.

Reinforced Concrete Pressure Pipe



Certain other classes of pipe



FOUR PLANTS TO SERVE YOU

American manufactures four classes of reinforced concrete pressure pipe in diameters ranging from 12 in. to 12 ft., and for all pressures related to modern American water works practice.

American PIPE AND CONSTRUCTION CO.

Concrete Pipe for Main Water Supply Lines, Storm and Sanitary Sewers, Subaqueous Pipe Lines
P. O. Box 3428, Terminal Annex, Los Angeles 54, California
Main Offices and Plant—4635 Firestone Boulevard, South Gate, California
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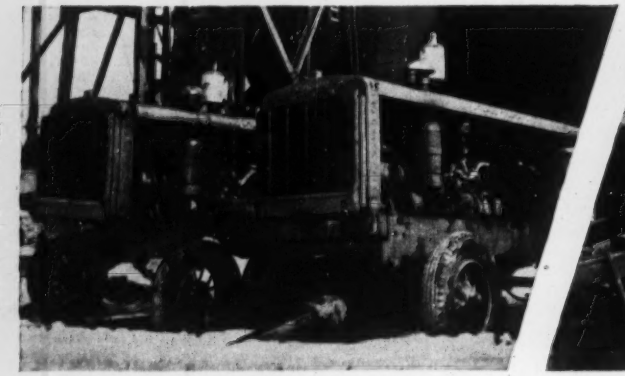
CP-600 Portable Compressor powers two G-300 Wagon Drills.



Two CP-600 Portable Compressors in a bulk plant.

CP-105 Portable Compressor meets demands for air on concrete placement job.

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LEGAL

Construction of contracts

Three recent court decisions contain statements concerning the controversial issue of the construction to be placed on contracts. They are as follows:

"It is a rule of universal application that in construing a contract each and every part of it must be taken into consideration and given effect if possible, and that the intention of the parties must be ascertained from the entire instrument. An interpretation will not be given to one part of a contract which will annul another part of it."[1]

"Where ambiguity or uncertainty is involved, the intention of the parties is not ascertained by resort to a literal interpretation of an isolated provision but by a consideration of the instrument as a whole. The object sought to be obtained and other circumstances, if any, which tend to clarify the real purpose and intent of the parties. Heckard v. Park, 164 Kan. 216, 188 P. 2d 926. A practical and equitable construction of ambiguous terms of a contract should be accepted."[2]

"As an aid in discovering the all-important element of intent of the parties to the contract, the trial court may look to the circumstances surrounding the making of the agreement [citing cases], including the object, nature and subject matter of the writing [citing cases], and thus place itself in the same situation in which the parties found themselves at the time of contracting [citing cases]. Also applicable here is the familiar rule that when a contract is ambiguous, a construction given to it by the acts and conduct of the parties with knowledge of its terms, before any controversy has arisen as to its meaning, is entitled to great weight, and will, when reasonable, be adopted and enforced by the court. [citing cases.] The reason underlying the rule is that it is the duty of the court to give effect to the intention of the parties where it is not wholly at variance with the correct legal interpretation of the terms of the contract, and a practical construction placed by the parties upon the instrument is the best evidence of their intention. [citing cases.]"[3]

(1) Neal D. Ivey Co. v Franklin Associates, 87 A. 2d 236.
(2) Tate v Stanolind Oil & Gas Co., 240 P. 2d 465.
(3) Mac Intyre v Angel, 240 P. 2d 1047

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

Roof-truss design and fabrication by Timber Structures, Inc.

How American Textile protects their dye house trusses and roof-deck from rot and decay

• In 1951, when American Textile Processing Co., Inc. planned their new dye house in Paterson, New Jersey, they designed one of the most modern plants in the industry. The roof of a dye house calls for the insulating qualities of wood . . . but the constant presence of acid vapor, steam and condensate makes for a serious maintenance problem. American Textile Processing solved this problem by specifying that all wood used in the trusses and roof decking be pressure-treated Wolmanized® lumber.

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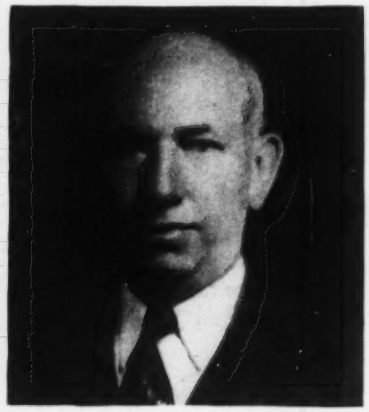

SYDNEY WILMOT enters new career as consultant editor for technical publications.

ASCE publications editor retires after 30 years

Sydney Wilmot, manager of technical publications of the American Society of Civil Engineers, retired Jan. 1 to a new career as a private consultant on special problems concerned with the editing and publication of technical papers and reports.

For the past 30 years Wilmot has directed the publication of the entire written record of ASCE technical accomplishment, including "Proceedings," "Transactions," and technical manuals. For the first 16 years of its existence, "Civil Engineering," the Society's monthly magazine, was also under his editorship.

Wilmot was graduated in civil engineering from Brown University in 1909, and in 1913 received an M.A. from Columbia University. Following an early engineering career on projects including the Catskill water supply system for New York City, the New York subway system and the Panama Canal, Mr. Wilmot, from 1918 to 1923, was assistant professor of civil engineering at Brown. It was from this position that he went to the ASCE.

Retiring Iowa road chief remains as consultant

Edward F. Koch, new chief engineer for the Iowa State Highway Commission at Ames, Iowa, has succeeded Fred R. White, who had been chief engineer for 33 years and prior to that district engineer at Ames for the U.S. Bureau of Public Roads for 20 years. He remains with the commission as a consulting engineer. The commission wants to make use of his familiarity with the financing of public highways.

General Larkin retires; builder of Ft. Peck Dam

Lieutenant General Thomas B. Larkin, Army Assistant Chief of Staff, G-4, for Logistics, since March, 1950, having reached the statutory age, retired from military service on Dec. 31.

General Larkin first came into prominence as an engineer officer as a result of his able direction of the construction of Ft. Peck Dam on the Missouri River, a hydraulic fill of unprecedented size. At that time he had had 18 years of varied experience in the Corps of Engineers, including service in France in World War I and direction of levee construction on the Mississippi River as district engineer at Vicksburg.

General Larkin served as district engineer at Fort Peck from 1933 to 1937. Two years later he was sent to Panama to take charge of another large engineering operation, construction of the Third Locks. He remained there until 1942, when he was brought back to the United States to become chief engineer of the Services of Supply in World War II. A year later he was sent to North Africa to take charge of Service of Supply Operations there, later becoming commanding general of the Communications Zone, North Africa Theater of Operations.

Following completion of the campaign in North Africa, General Larkin was transferred to similar work in the Communications Zone in France. In 1945 he again returned home to become commanding general of the Second Service Command at Governor's Island, N. Y.

LT. GEN. THOMAS B. LARKIN, retired after almost 40 years of service.

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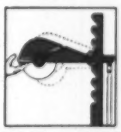

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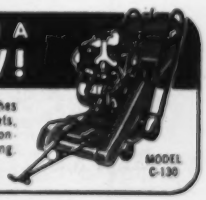

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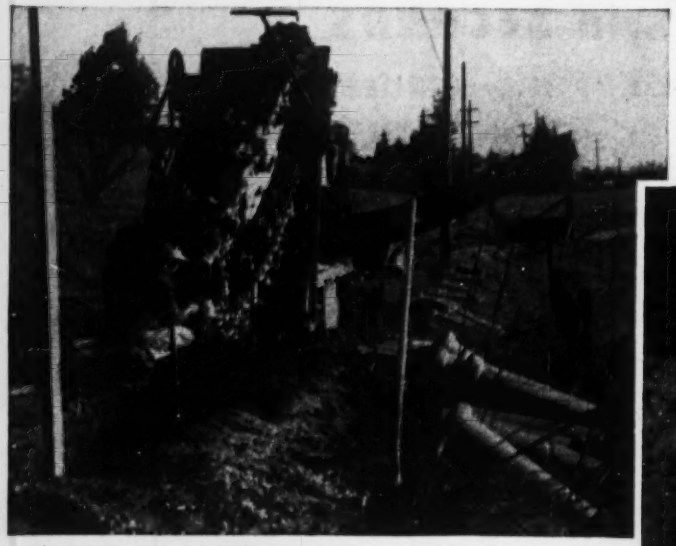
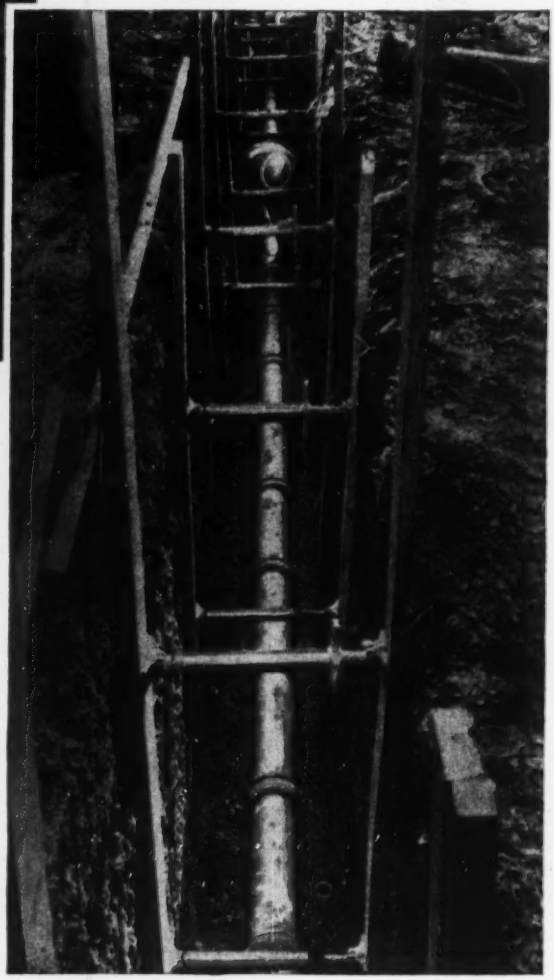


Clay Pipe—381,000 feet of it—was used in this sewerage project northeast of San Jose, California, a residential area that mushroomed as defense workers poured into the area.



CLAY PIPE gets another 72-Mile Testimonial

Here's a testimonial 381,000 feet long, proving once again that Vitrified Clay Pipe is the time-tested material engineers and public officials depend on for sanitary sewerage. Thanks to their foresight, thousands of new homes in the San Jose district, as well as essential housing projects throughout the nation, will enjoy the *permanent* sanitary protection that only clay pipe can offer.

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GI contractors in 6 years gross $6 million

Six years ago Robert and Charles McDowell, two veterans from Nashville, Tenn., got a GI loan to buy a tractor, a bulldozer and a road scraper. Also, with every penny of their savings, they bought four old war surplus trucks.

With that bare minimum of equipment, and with no cash to spare, they went into the contracting business, specializing in grading and excavating jobs.

Today, the two veteran-brothers have built their enterprise up to one of the largest in the South. So far, they've handled more than $6 million of construction business. Their crews are currently at work on projects totaling $1.5 million.

They hire 200 people, own 160 pieces of earth-moving and road-building equipment, and are licensed to build highways in Tennessee, Alabama and Kentucky. During the six years, they've graded and excavated airports and Army camps, housing developments and factory sites, roads and highways, and many other projects.

At present, their office building, service building and repair shops occupy a three-acre site on the outskirts of Nashville.

• **Experience**—Charles McDowell had been operating heavy equipment for a construction firm for seven years before the war. A member of the First Marine Division, he drove a Caterpillar D-6 ashore during the invasion of Okinawa. In his 30 months in the Marines he handled grading and road building problems under the roughest of combat conditions.

His brother, Robert, worked as a heavy equipment operator for three years after high school. He quit to go to college and was graduated from the University of South Carolina with a BS in CE. He was named to Phi Beta Kappa. During the war he served three years as a Seebee.

Construction machinery inventor gets high post

The appointment of John W. Poulter as chief engineer for the Koehring Company was announced recently by President Julien R. Steelman.

Poulter has been associated with Koehring since 1931. He is widely known for his invention and development of the Mud-Jack, a machine designed to provide an inexpensive method of stabilizing subgrades under concrete slabs.

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for big jobs

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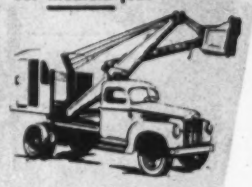

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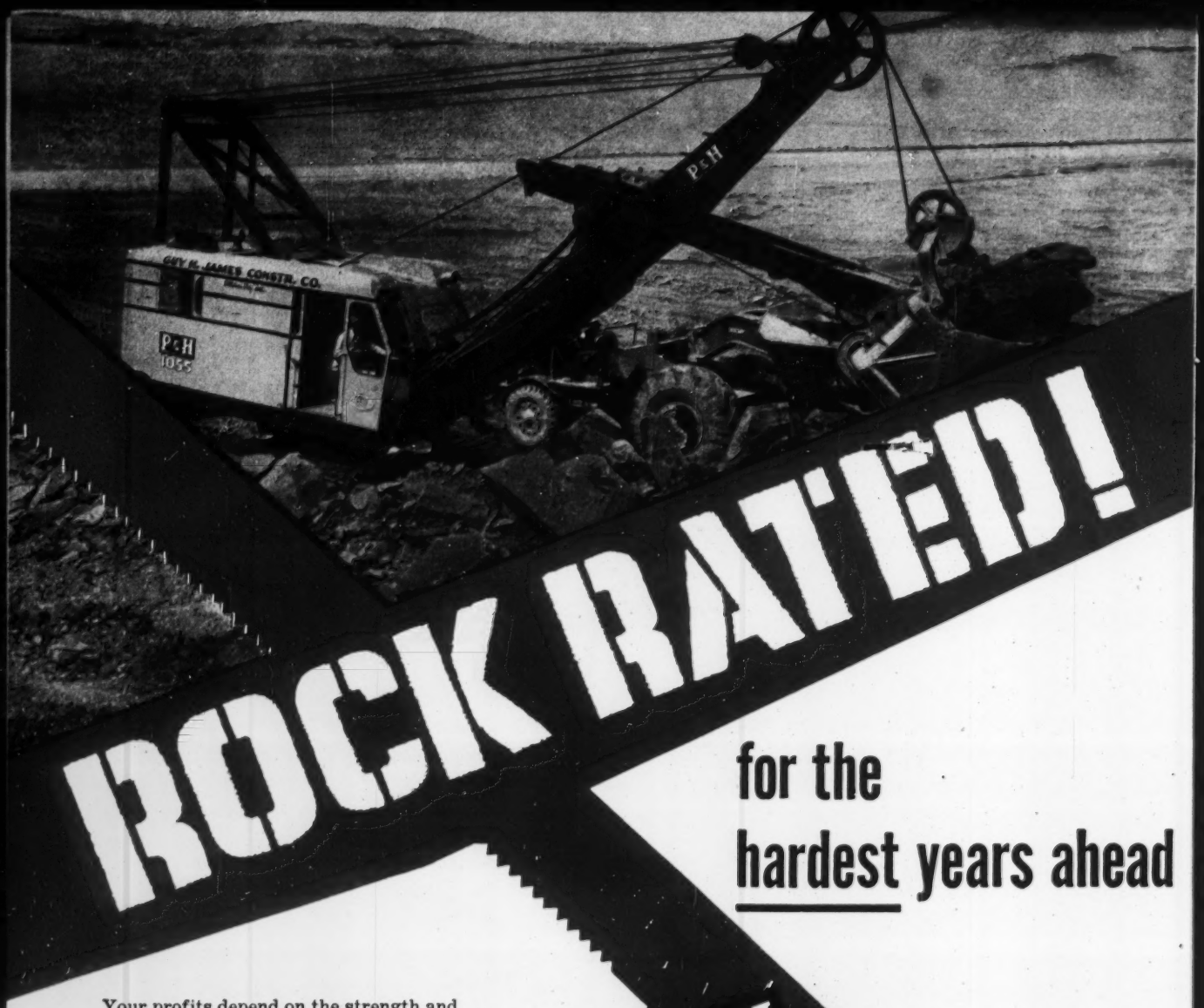

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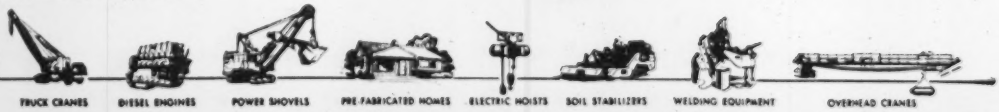

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Seabees celebrate 11th birthday; still at work on overseas projects

The Navy's master builders, the famous Seabees, had their 11th birthday on Dec. 28.

Known throughout the world for their construction feats during World War II, the Seabees are the youngest component of the Navy. The organization was authorized shortly after Pearl Harbor, and in 1946 was made a permanent part of the Navy in recognition of its skill and ingenuity in construction of advanced bases and its performance in amphibious operations.

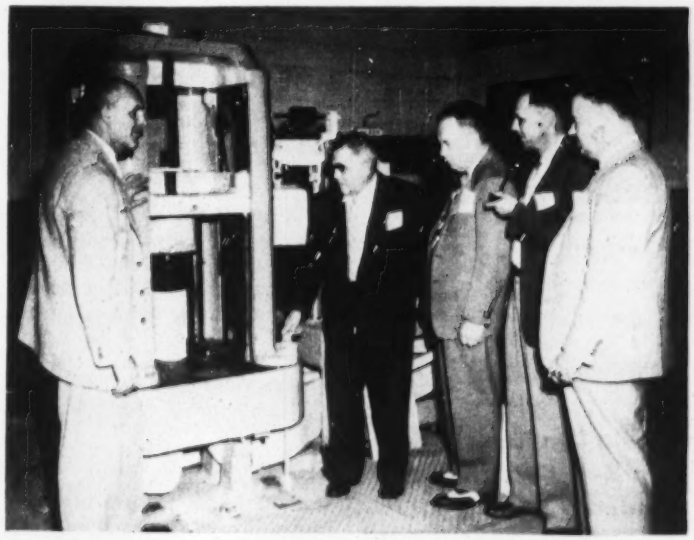
Today, a Seabee force, small compared with the 250,000-man organization of World War II, is at work on vital construction and maintenance jobs overseas.

Few of the World War II Seabees are still in active service. Most of them returned to jobs in civilian construction industry, but the achievements of the old Seabees are an inspiration to the present ones.

Today the Seabees are, mostly, younger men who have been trained in construction at the U. S. Naval Construction Schools at Port Hueneme, Calif., but the Navy is still keenly interested in getting older, experienced men for the Naval Construction Forces. They are needed for their skill as workmen, and to assist younger Seabees to develop knowledge in Seabee specialties.

Because of this need, the Navy has opened petty officer ratings to seasoned construction workers. Qualified men in the CB Reserve who want active service should apply for active duty in the Seabees. Those who have no reserve status can enlist in the reserve and then submit a request for active duty.

The Seabees still have close ties with the Marines. Construction feats performed by the Seabees for Marines in Korea have been similar, although on a smaller scale, to their fabulous performance in World War II when they carried on one of the largest construction programs in the history of the world.



New Hampshire compression tester exhibited

NEW OFFICERS of the New Hampshire Society of Engineers inspect a 300,000-lb compression testing machine in operation on a test cylinder of concrete, in the laboratory of the N. H. Department of Public Works and Highways at Concord. Left to right, are Paul S. Otis, state materials and research engineer, explaining the press to Howard Q. Otis, of Concord, district engineer for the U. S. Bureau of Public Roads, retiring president of the society; A. M. Whittemore of Concord, bridge division engineer of the state Public Works and Highways Department and secretary-treasurer of the society; Grant L. Davis of Dover, consulting engineer and society vice-president; and Lauren E. Seeley, dean of the College of Technology at the University of New Hampshire, Durham.

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How to produce and use concrete by modern methods. Every important phase of concrete technology—preparing specifications, supervising construction, and testing concrete and concrete materials—is fully covered. Includes best practices in proportioning, making, placing, finishing, and curing concrete. **By E. E. Bauer, University of Illinois. Third Edition, 441 pages, 166 illustrations, $6.00**

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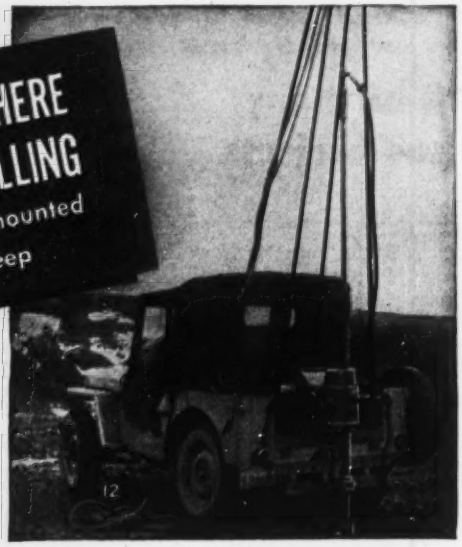


JEEP IT ANYWHERE FOR TEST DRILLING

Core drill can be mounted on truck or jeep

The new Acker Teredo is so light, so compact, so simple, that it can be mounted easily on truck or jeep and driven by separate motor or power take-off. Small as it is, the Teredo is a high capacity, fast-operating unit capable of extracting cores up to 2-3/16" in diameter and of drilling to depths of 600 feet.

Send for bulletin 3-A-ENR.

ACKER DRILL COMPANY, INC.
SCRANTON 3, PENNSYLVANIA

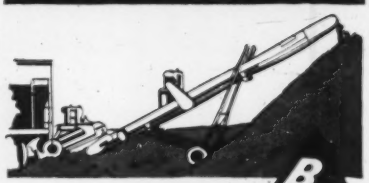
MacArthur Means:

- **Experience** 43 years of it, installing concrete pile foundations
- **In** every soil condition
- **For** every type of structure, all over the U.S.

You'll find the MacArthur story interesting. Write for it.

MacArthur
CONCRETE PILE CORP.
18 East 48th Street
New York 17, N. Y.
NEW ORLEANS CINCINNATI

one MAN



. . . with a Portable Conveyor and a B-G Car Unloader unloaded a car of coal in

45 MINUTES

see your B-G distributor or write

Barber-Greene
AURORA, ILLINOIS, U. S. A.

OBITUARY

Antonio Lucchetti, 64, executive director of the Puerto Rico Water Resources Authority, died in San Juan, Dec. 19. He was creator of the island's modern water resources program. He was a civil engineer graduate of Cornell University, 1910, and almost immediately went into government service. The Puerto Rico Water Resources Authority was formed in 1941 with Mr. Lucchetti at its head. He expanded the program to 13 hydroelectric and four steam generating plants. He raised funds for building the plants, dams and irrigation systems through electric revenue bond issues of more than $75 million between 1947 and 1950.

Charles R. Bricker, 74, senior partner in Bricker & Lynn, Warren, Ohio, engineers and surveyors, died Dec. 11.

John C. McVea, 76, for 10 years city engineer at Houston, Tex., died Dec. 16. He took his C.E. degree at the University of Texas, and did railroad engineering work at first. He started working for Houston in 1913. He was city engineer from 1919 to 1929. After 12 years in private engineering practice, he returned to city employment and for six years was chief of surveys and maps for the city utility department.

John R. McGonegal, 64, project manager of the Arthur A. Johnson Corp., engineering and heavy construction, died at Sunbury, Pa., Dec. 18. While with the J. F. Cogan Co., he was active in sewer and subway construction in New York City. Recently he had been reconstructing a chain of power stations for the Pennsylvania Power and Light Co.

Charles Sawyer, 62, Traverse City, Mich., a former city engineer and designer of the Traverse City Municipal Airport, died Dec. 9.

Howard Leslie Foster, 58, Birmingham, Mich., a structural engineer for Giffel and Vallet, Inc., Detroit, died Dec. 13.

Albert E. Allen, 75, retired construction superintendent for the Army Engineers, died Dec. 21 in Falls Church, Va. His retirement 10 years ago ended a 30-year career as construction supervisor for the Army. Projects on which he worked included various dams and locks on the Ohio River and flood control facilities on the Mississippi.

From this great plant come the world's finest trailer axles!

Before any trailer axle is put into production at Timken-Detroit's Kenton plant, months—and even years—are spent in designing, developing and testing. Shown above is just a portion of Timken-Detroit's engineering department.

Trailer axles are *important* at The Timken-Detroit Axle Company! That's why this great Timken-Detroit plant is devoted to developing and producing the finest trailer axles on the road. Located at Kenton, Ohio, this modern plant is completely equipped to mass-produce trailer axles of every capacity. It is staffed by highly trained technicians who have at their fingertips the vast engineering and research facilities of The Timken-Detroit Axle Company. Even more important, these fully qualified specialists can draw upon more than 40 years of Timken-Detroit experience in building axles for trucks, buses and trailers. Yes, just as they do with driving axles, so too, does Timken-Detroit point the way to *finer* trailer axles.

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

PLANTS AT:
Detroit and Jackson, Mich. • Oshkosh, Wis. • Utica, N. Y.
Ashtabula, Kenton and Newark, Ohio • Newcastle, Pa.

TIMKEN *Detroit* **AXLES**

A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN

Accepted D A Standard

TRADE MARK REGISTERED

For a factory-type replacement job...

Buy genuine

TIMKEN-DETROIT AXLE PART

in kits!

Are your trucks Timken-Detroit-equipped? If so, make sure they *stay* that way! Install *only* genuine Timken-Detroit Replacement Parts when your axles and brakes need parts.

Many genuine Timken-Detroit Axle Parts are packaged in convenient kits which contain all the essential related parts to do a factory-type repair job. Specialized kits for many different axle and brake replacement jobs are available—every part identical with the original equipment. Maintenance is easier, longer-lasting, more complete.

Always insist on genuine Timken-Detroit Axle and Brake Replacement Parts when new parts are needed. Buy them in protective, money-saving kits. You'll find them wherever the Timken-Detroit Axle Parts sign is displayed.

THE SIGN OF
GOOD TRUCK MAINTENANCE
Look for it!

Genuine
TIMKEN
Detroit
AXLE PARTS

The Accepted DA Standard
TRADE MARK REGISTERED

THE TIMKEN-DETROIT AXLE COMPANY
Detroit 32, Michigan

BOOKS

Better use of engineers

How to Improve the Utilization of Engineering Manpower — Executive Research Survey No. 2. 55 pp. National Society of Professional Engineers, 1121 Fifteenth St., N.W., Washington 5, D. C. $2.00.

This second report by the "Professional Engineers Conference Board for Industry" of the National Society of Professional Engineers is concerned with a problem of current interest—how to offset the continuing shortage of engineers. The pamphlet presents an analysis of replies from 495 companies employing engineers, including manufacturers, utilities, contractors and service engineering organizations. The large majority were industrial organizations.

The total number of engineers employed by these companies is 106,000 in 4,000 plants, which would indicate that most of the large employers of engineers are covered by the report.

Interesting highlights of the report are that despite the shortage of engineers, 70% of the companies still use engineers for non-engineering work. On the other hand, use of "supporting personnel" to relieve engineers of routine work is on the increase. Twenty-three percent of the companies now have women engineers on their staffs, and 64% said they would use women engineers if available.

Special steps taken to relieve the shortage are: relaxed age standards; relaxed requirements for education and experience; and lower standards for physical condition. More than half the companies employ outside consulting firms for engineering work, 31% let drafting work to contract, 20% are using retired engineers, 10% employ non-citizen engineers, and 26% use research organizations.

NEW ENGINEERING BOOKS

Textbook of Engineering Materials —By Melvin Nord. 518 pp. John Wiley and Sons, 440 Fourth Ave., New York 16, N. Y. $6.50.

Statistical Tables and Problems—Third Edition. By Albert E. Waugh. 242 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $3.00.

Descriptive Geometry—By E. G. Paré, R. O. Loving, & I. L. Hill. 309 pp. The MacMillan Co., 60 Fifth Ave., New York 11, N. Y. $4.00.

Color Fundamentals — With 100 Color Schemes—By Maitland Graves. 206 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $10.00.

EXPERT "GUNITE" REPAIRS SAVE DAM

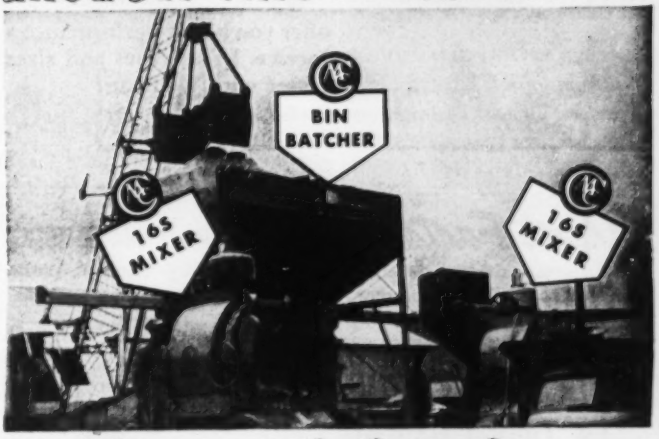
Recently we were called upon to make "GUNITE" repairs on the Connecticut Light and Power Corporation's Tunnel Dam. Its poor condition, at the time, is shown in the upper right picture.

After chipping away all loose and unsound masonry, we installed a system of drainage channels and weep pipes and completely reintegrated the down stream face with reinforced "GUNITE." The photo at left shows the actual application of "GUNITE" over welded reinforcing mesh.

Other dams we have saved by this method are pictured in Bulletin (A) 2400, together with a wide variety of other "GUNITE" applications. Write today, on your letterhead, for a copy.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN PENNA U.S.A.
MANUFACTURERS OF THE CEMENT GUN

You can't beat this combination



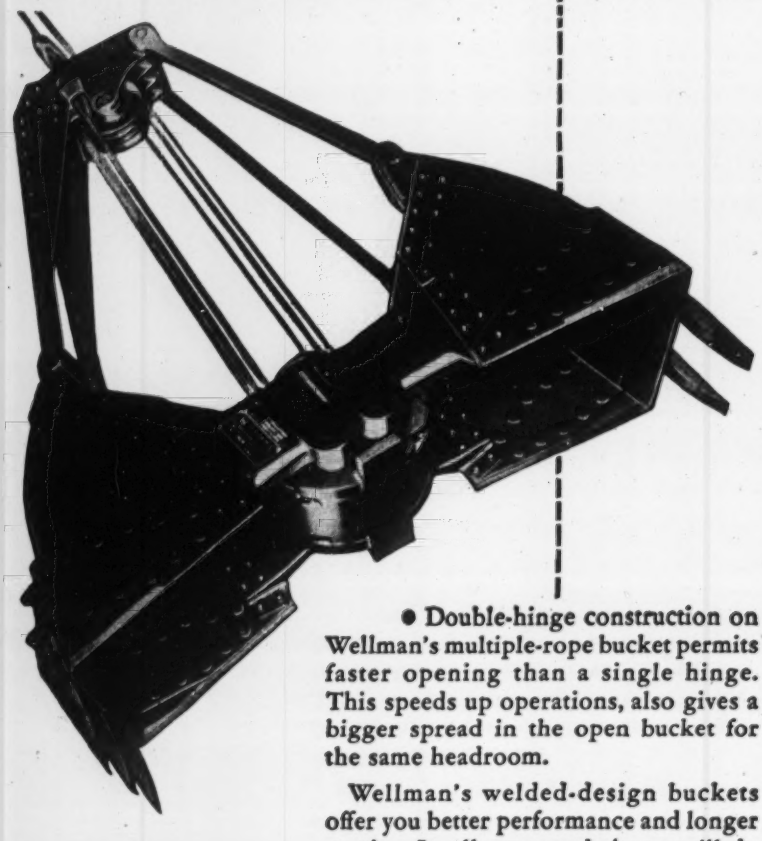
It's double speed ahead now!

Here's a portable Central Plant that amazingly reduces pouring costs. It's CMC 165 Mixers in *tandem* with CMC *two-bin* BIN-BATCHER. When you buy select CMC equipment you get the best. Every piece of CMC equipment is *built to take the punishment of long service!* Write today for latest catalog.

CMC
CONSTRUCTION MACHINERY CO'S.
MIXERS—PUMPS—HOISTS—SAWS
DUMPOVER PARTS

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS



• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

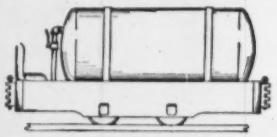
Want Facts?

Write for free descriptive bulletins.

CLAMSHELL • DRAGLINE • CUSTOM-BUILT BUCKETS • STONE AND WOOD GRABS

THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue
Cleveland 4, Ohio

AIR LOCOMOTIVE for Tunnel Haulage



Operates at 100 p.s.i. pressures. May be recharged at any Air Valve. Prices for 24" gage factory (fob) begin at **$1600**

MAYO TUNNEL & MINE EQUIPMENT LANCASTER, PA.

New Transits and Levels by Experts

Each Buff is dependable, accurate and economical.

Send for catalog #329.

Headquarters for Repairs

Every make of instrument, renewed by Skilled Workmen.

Our Shops are located at Jamaica Plain, Boston, Mass.

Buff & Buff Mfg. Company

HENRY A. BUFF, *President.*

BOOKS

WELDED HIGHWAY BRIDGE DESIGN—Selections from designs submitted to the James F. Lincoln Arc Welding Foundation. Edited by James G. Clark. 240 pp. James F. Lincoln Arc Welding Foundation, Box 3035, Cleveland 17, Ohio. $2.00.

THE STRUCTURAL ANALYSIS OF THE DOME OF DISCOVERY—By T. O. Lazarides. 64 pp. Crosby Lockwood & Son, London; and The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. $5.00.

EXAMPLES OF THE DESIGN OF REINFORCED CONCRETE BUILDINGS—By C. E. Reynolds. 214 pp. Concrete Publications, Ltd., 14 Dartmouth St., London S.W. 1, $2.40 (inc. postage).

FATIGUE AND FRACTURE OF METALS—A SYMPOSIUM—313 pp. The Technology Press of The Massachusetts Institute of Technology and John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y., $6.00.

LEAD IN MODERN INDUSTRY—230 pp. Lead Industries Association, 420 Lexington Avenue, New York 17, N. Y., $1.50.

STUDENT DEFERMENT IN SELECTIVE SERVICE—By M. H. Trytten. 140 pp. University of Minnesota Press, Minneapolis 14, Minnesota. $3.00.

ASTM STANDARDS ON PAINT, VARNISH, LACQUER, AND RELATED PRODUCTS—September 1952. 784 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $5.75.

ASTM STANDARDS ON MINERAL AGGREGATES, CONCRETE, AND NONBITUMINOUS HIGHWAY MATERIALS—October 1952. 296 pp. American Society for Testing Materials, 1916 Race Street, Philadelphia, Pa. $2.75.

LABORATORY MANUAL OF MATERIALS TESTING—By R. T. Liddicoat and Philip O. Potts. 239 pp. The MacMillan Co., 60 Fifth Ave., New York 11, N. Y. $4.00.

UNDERGROUND WATER POLLUTION RESULTING FROM WASTE DISPOSAL—Los Angeles Regional Water Pollution Control Board, 541 S. Spring St., Los Angeles 13, Calif.

EMERGENCY DEFENSE ACTIVITIES HANDBOOK—Superintendent of Documents, Washington 25, D. C. 30c.

THE STORY OF SAFETY—E. I. Du Pont de Nemours & Co., Wilmington, Del.

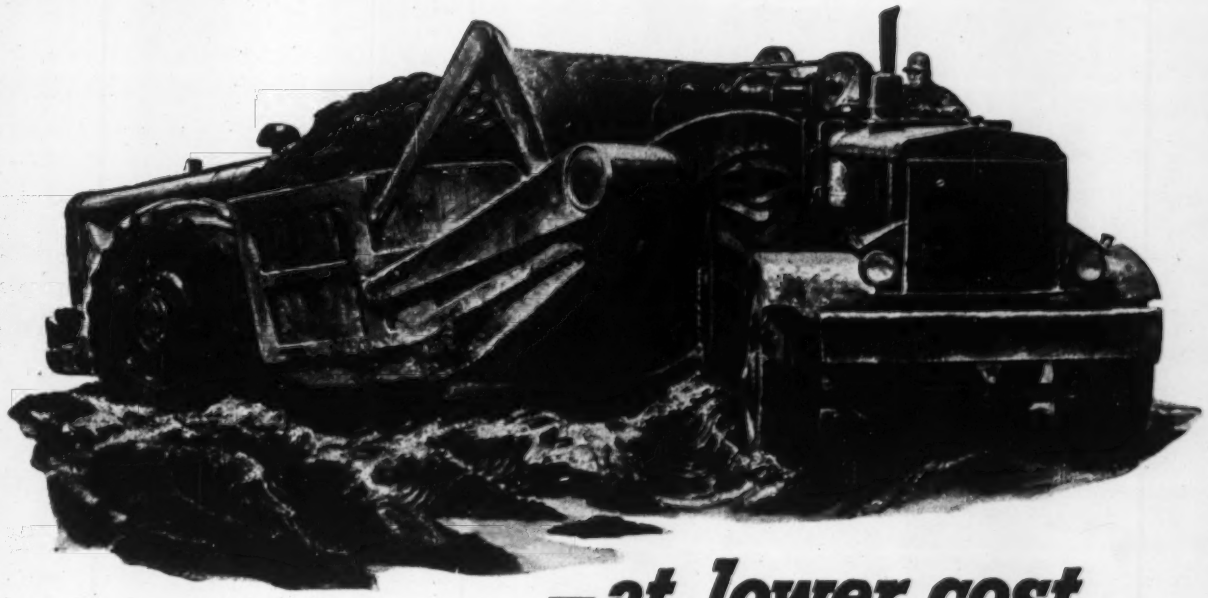
GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEMS—ASA B31.—1.8-1952 The American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y. $1.25.

REPORTS AND PAMPHLETS

TRUCK & BUS DRIVERS RULE BOOK—Revised. Accident Prevention Department Association of Casualty and Surety Companies, 60 John Street, N. Y. 38.

HOW TO IMPROVE THE UTILIZATION OF ENGINEERING MANPOWER—Executive Research Survey No. 2—Prepared by The National Society of Professional Engineers, 1121 Fifteenth Street, N.W., Washington, D. C. $2.00.

Moves big payloads faster



—at lower cost

BIG earth-moving vehicles like this twin-engine self-loading scraper get more work done faster because of Allison TORQMATIC DRIVES. These time-proved hydraulic drives — more than 10,000 have been built for Army tanks and heavy-duty vehicles—make multiple engine applications possible —and practical.

TORQMATIC DRIVE provides a smooth, steady, oil-cushioned flow of power—high-starting torque with uninterrupted acceleration —protection against shock-load damage to engines and equipment. It eliminates engine lugging and stalling while maintaining power to drive wheels at all times. This permits the engine to operate in its most effective speed range by balancing engine power with load requirements.

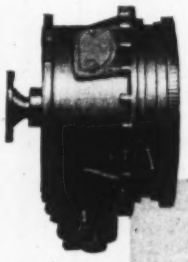
Users of trucks, scrapers and other vehicles equipped with TORQMATIC DRIVE *report up to 30% more work done and 15% less cost per yard than with a mechanical drive* — additional good reasons why engineers are designing Allison TORQMATIC DRIVES into all types of heavy-duty equipment.

Allison TORQMATIC DRIVES are the only heavy-duty full torque-shifting vehicle transmissions available today—engineered for compactness, permitting flexibility of drive-train design for today's and tomorrow's vehicles.

Like to know more about TORQMATIC DRIVES? Write us for Engineering Data Bulletin which gives full specifications.

ALLISON *Division of* GENERAL MOTORS
Box 894EE, Indianapolis 6, Indiana

GM GENERAL MOTORS



Compact, efficient hydraulic drive for . . .

Allison TORQMATIC DRIVES

CRANES TRACTORS TRUCKS SHOVELS LOCOMOTIVES DRILLING RIGS

When you blast in an area like this...

Roadway near gas storage tanks.

Parking lot below roadway.

Adjacent residential area.

Instrument factory opposite blast area.

ABOVE are some of the blasting problems that faced the Central Pennsylvania Quarry, Stripping and Construction Company on By-pass Route 22 through Easton, Pa. The highway passes gasoline storage tanks, business establishments, homes, a cemetery, a precision instrument factory and a parking lot full of cars. As a result, maximum control was imperative. Flying rock had to be minimized, yet good displacement was needed for easy digging.

The results of the ROCKMASTER blasting system on this job speak for themselves. The contractor obtained efficient use of force, controlled throw and maximum breakage. Noise, flying rock and vibration were kept to a minimum. The broken rock was blasted *toward* the slope and not scattered into the valley below.

When you have shooting problems like this, ROCKMASTER can help you, too. Literature is available.

Rockmaster® can help you like this...

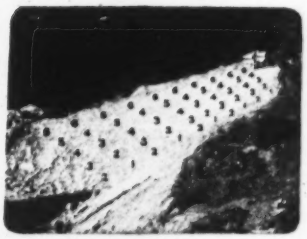
1. One section of the roadway . . . 100 holes loaded and ready to shoot.

2. Burden receiving full power of the explosives. Flying rocks eliminated.

3. Peak of blast. Confinement excellent. Burden moving up slope.

4. Full second after detonation. Gases appear but air blast avoided.

5. Final pile shows good displacement. See how it has "climbed" slope.



This is the pattern of the blast. It was loaded in five rows of twenty holes each, arranged to fire in ROCKMASTER *periods shown at left.*

1 & 2—Row 1

2 & 3—Row 2

3 & 4—Row 3

4 & 5—Row 4

6—Row 5

ATLAS

ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE

Offices in principal cities

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
February Materials, and Labor Prices will appear in February 5, 1953 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		READY MIXED CONCRETE 1:2:4, over, 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand	grav. Lt. wgt. agg.	
Atlanta	$3.81	$3.50	3.30	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.19	$0.19	$11.99
Baltimore	3.76	3.45	3.38	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	11.25
Birmingham	3.11	2.81	....	2.38n	2.38n	2.08n	2.50	2.50	1.15	1.35	.165	.165	9.85
Boston	4.01	3.69	3.81	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.20	.22a	11.50h
Chicago	3.33	3.02	....	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b	11.44/11.94
Cincinnati	3.61	3.40	3.40	2.09‡c	2.14‡c	2.14‡c	2.44‡e	2.44‡e	....	....	.21	.225a	11.45
Cleveland	N. A. in C. L.		....	2.05xf	1.85f	1.65	3.81a	3.81a	2.95‡	2.95‡	....	.23	12.40d
Dallas	2.95	2.65	2.70	2.18	2.28	1.84	2.22	2.38	....	....	.125e	.215	9.30
Denver	3.89	3.59	3.89	1.85	2.00	1.20	....	....	....	....	.22	.25a	10.50
Detroit	3.27	3.00	3.05	4.25‡b	4.25‡b	3.75‡b	4.25‡	4.25‡	4.25‡	4.25‡	.19	.20a	10.75f
Kansas City	3.30	3.03	3.15	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	....	....	.20ag	.215e	11.60h
Los Angeles	4.00a	3.60a	4.72	1.95a	2.20a	1.95a	1.95a	2.08a	....	....	.125fm	.23m	10.43ih
Minneapolis	3.80d	3.49d	3.41	2.30‡ag	2.30‡ag	1.35‡ag	2.50‡ag	2.50‡ag	....	....	.21ik	....	12.15fi
Montreal	3.01ae	2.86ae	....	3.00	3.00	2.25	1.55ij	1.85ij	....	....	.20	.20a	10.55ek
New Orleans	3.20	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.86	3.55	3.43	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....	11.80an
Philadelphia	3.43/3.82‡	3.12/3.49‡	3.43/3.48‡	2.75‡	2.75‡	2.15‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....	11.50
Pittsburgh	3.32	3.04	3.32	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.22d	12.50
St. Louis	3.27/3.48b	2.84/3.10b	3.05/3.22	2.90am	2.70am	2.30/2.70am	1.70j	1.70j	1.50	1.50	.215	.215es	10.75
San Francisco	3.36	2.96	....	1.92	1.92	2.02	2.02	2.02	....	....	....	.23el	10.70e
Seattle	3.75a	3.25a	4.50n	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.3325j	11.40j

‡Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers comm. not incl. d Dealers sell only LCL. h LCL.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¾". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots asd. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.
CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 5‡ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x16. l F.o.b. plant San Rafael. m F.o.b. yard.
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. brackets. d 1–3 mi. zone. e 2,000 lb concr. f 2500 lb. comp. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
West Des Moines, Iowa.	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
Nazareth, Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.61
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	W. Winfield, Pa.	2.65†

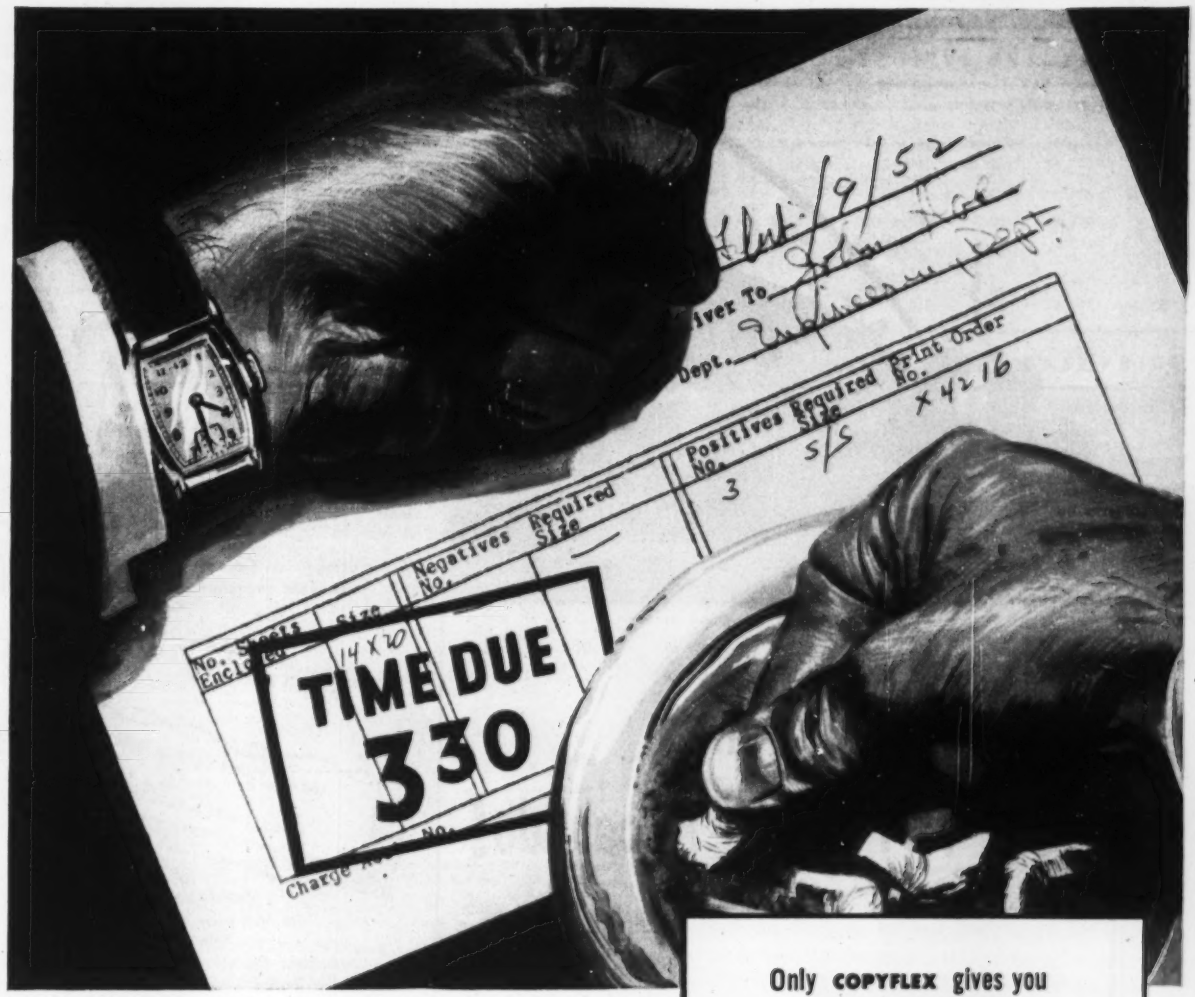
†*Prices to hold for first quarter of* 1953.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	$26.00	$33.25	$0.1975	$0.339	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	58.00‡	.....	22.00i	.....	.0809i	0.15i	.09iw	.17iw	.09i	.09i	0.12i
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	35.50a	22.00ax	35.50ax	.....	.....	.09a	.105a	.22a
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bv	29.25bv	.0875bw	.10bw	.075b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	55.00d	5.03g	23.00A	.....	23.00A	.....	.1025Aw	.194w	....	.11A	.18A
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	27.09	47.87	.0980	.1041	.2128
Denver	.....	48.00	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	92.00	.....	26.82	....	26.82v	.....	.117w	.....	.0925	.....	.2811r
Kansas City	e	e	e	16.50el	...	.055	.....	.07nw	.....	.0585e	0.435	.....
Los Angeles	e	.....	e	15.50dmz	...	15.50dmz	....	17.00ds	.....	16.00ds	.0825f	.1725f
Minneapolis	.....	.....	2.97h	25.07	....	24.07	.....	.0894w	.....	.0794	.0935	.....
Montreal	.....	e	e	27.10n	36.65n	.135n	.193n	16.30nu	18.80nu	.132n	.184ns	.225ns
New Orleans	.....	.....	.....	17.50s	....o	17.50vs	.....o	.085ws	.....o	.0825p	.0825	.....
New York	.....	.....	3.12f	26.26q	47.59q	25.26st	46.58st	.1071w	.2021w	.1071	.1072	.1993
Philadelphia	175.00	110.00	4.06	22.00	....	.....	.....	.095u	.....	.....	....	....
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.21	27.00	39.00	.095	.09	.205
St. Louis	.....	.....	.....	18.68f	....	.1698	.....	.0865/.089w	.....	0.15	.0975	.....
San Francisco	.....	55.00e	.....	17.00g	32.50gp	17.10gkv	32.50gkv	19.00g	36.50g	17.50w	.085y	.....
Seattle	.....	.....	.....	17.00A	37.50A	16.25Av	.....	19.50A	....	18.50Av	.095A	.105Ar

‡ Delivered.
PAVING BRICK & BLOCK: a CL. b 3½ x 4 x 8½. c 2½ x 8½ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3⅝ x 8⅛.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i F.o.b. refinery, Baltimore. j F.o.b. refinery, Inglewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q 40–85 penetr. r In customers drums. s Shipped in drums, per drum. t 85–300 penetr. u Per 100 gal. v Per ton. w Per gal. x Also tank trucks. y F.o.b. Oakland. A F.o.b. refinery, Cleveland. B F.o.b. Norco, La.

(*Continued on page 87*)



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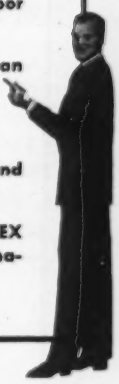

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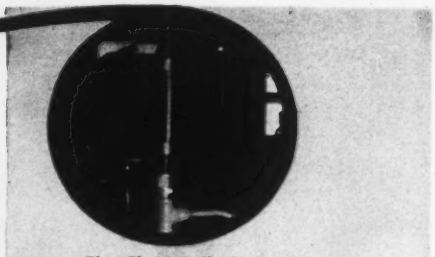
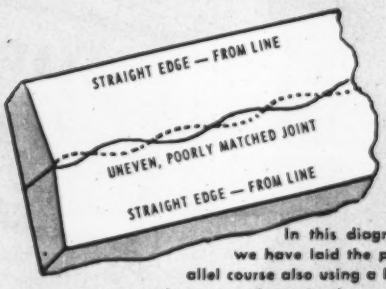
City.....Zone.....State.....

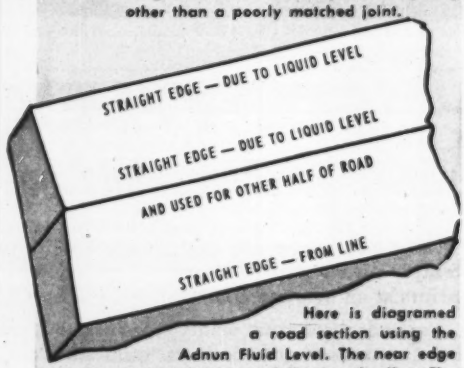


The Fluid Tells You
The Course Is Level

Here is a section of half of a road in diagram. The outside edge has been laid by using a line. The edge at the center will assume the irregularities of the subgrade.



In this diagram we have laid the parallel course also using a line at the outer edge. As the center edge will also follow irregularities of the subgrade there is no hope for anything other than a poorly matched joint.


STRAIGHT EDGE — DUE TO LIQUID LEVEL
STRAIGHT EDGE — DUE TO LIQUID LEVEL
AND USED FOR OTHER HALF OF ROAD
STRAIGHT EDGE — FROM LINE

Here is diagramed a road section using the Adnun Fluid Level. The near edge is straight due to following the line. The center joint is true and matched true and the far edge is straight due to the Fluid Level.

A job no other BLACK TOP PAVER can do!

THE increased use of asphalt on high-speed highway must tend toward better construction, greater smoothness and tighter, safer joints.

Continuous Course Correction, an Adnun feature, has always made Adnun laid roads smoother and the overlapping action of the Adnun Cutter Bar has always assured compact joints.

Now Adnun makes it possible to maintain absolute alignment of the course at the longitudinal joints with a perfect match regardless of the subgrade. The Adnun Fluid Level gives you scientific control of your road surface as it's laid. Your operator just watches the glass—the fluid tells him the course is level. The Fluid Level brings you the same ease of control as a carpenter level brings the carpenter. Study the diagrams at the right. They tell you the story.

ADNUN
TRADE MARK REGISTERED

BLACK TOP PAVER

BLAW-KNOX

THE FOOTE COMPANY, INC.

Subsidiary of Blaw-Knox Co.

1922 State Street • Nunda, New York

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES— CARBON STEEL	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.85	$3.90	$3.95	$7.85	....	$75.50	$85.00	Not	$4.925	$6.65	$4.775	....
Chicago Area	3.85	3.90	3.95	7.85	$4.675	75.50	85.00	avail-	4.925	6.65	4.775	....
Pittsburgh Area	3.85	3.90	3.95	7.85	4.675	75.50	85.00	able	4.925	6.65	4.775	$9.85
Buffalo Area	3.85	3.90	3.95	7.75	4.675	75.50	85.00	....	4.925	6.65	4.775	9.85
Cleveland	....	....	3.95	7.85	4.675	.....	.....	....	....	....	....	9.85
Youngstown Area	....	....	3.95	....	....	.....	.....	....	....	6.65	....	....
Geneva	3.85	3.90	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	....	.....	.....	....	....	6.65	....	....
Pueblo	4.30	4.70	4.75	....	....	75.50	95.00	....	4.925	6.65	4.775	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH k Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING d Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 5 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$36.00‡	$40.00‡	A.P.M.* Joliet, Illinois, Donora, Penn., $2.81	A.P.M.* Joliet, Illinois, Donora, Penn., $1.96	A.P.M.* Joliet, Illinois, Donora, Penn., $2.95
Baltimore	6.47	6.81l	....	....	....	42.00	45.00	F.o.b. Mill: Monessen, Penn., $2.91	F.o.b. Mill: Monessen, Penn., $2.03	F.o.b. Mill: Monessen, Penn., $3.05
Birmingham	5.95	5.80	5.80	.05	.15	47.00p	52.00p			
Boston	6.56a	6.92	6.92	....	....	40.00	43.50			
Chicago	5.95	5.33ff	5.33ff	.0625	....	46.00C	51.00C			
Cincinnati	6.42ak	6.63r	....	....	.15	37.50uee	41.00uee			
Cleveland	6.28	5.31v	....	....	....	34.00‡	37.50‡			
Dallas	9.05	7.25	7.25	....	....	49.00	52.00			
Denver	7.55	7.50c	....	....	....	50.00s	62.00qq			
Detroit	6.42	6.24n	....	....	.20	53.00	58.00			
Kansas City	6.70nn	6.97	....	....	....	35.50	39.00			
Los Angeles	6.80/hh	6.82g	....	....	....	48.00	54.00kk			
Minneapolis	6.51hh	7.60ll	7.60ll	....	....	36.00	39.50			
Montreal	7.00iB/7.00A	4.90i	4.90g	....	....	51.00h	57.00h			
New Orleans	....	5.80ok	....	.05	....	66.00	60.00			
New York	6.77	6.71	6.71	....	.30	38.50st	42.50st			
Philadelphia	6.42	6.67	....	....	....	38.00‡	42.00‡			
Pittsburgh	5.80/6.00	5.80/6.00	....	....	.10	37.60	39.60			
St. Louis	6.35a	5.75e	5.75i	....	....	49.00aa	55.00aa			
San Francisco	7.12	6.50l	....	....	....	40.50	43.50			
Seattle	4.50e	5.80el	....	....	....	57.00mm	47.00mmz			

* All Producing Mill.

‡ Delivered. *b* Less than 700# add 50¢; 700–1499# add 65¢; 1500 to 7999# add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivered in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢, ⅞ in., ¾ in., 15¢, ⅝ in., 25¢, ½ in., 50¢, ⅜ in., 80¢, ¼ in., $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *hh* 10,000–19,999 lbs. *kk* ½" ribbed. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. # 10 tons to CL. *a* 2000–9999 lbs. *A.* Amer. struct'l shapes. *B.* Canadian shapes. *C.* Deliv to contractor.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft., f.ob. city 6" Pr Cl. 150	12" Sew Cl. 1	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13–44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14–41 12 in.	24 in.	*WROUGHT STEEL PIPE (Full standard weight)									
													3½ to 6 in. Lap Weld† Galv. %	3½ to 6 in. Lap Weld† Galv. %	3½ to 6 in. Butt Weld† Black %	3½ to 6 in. Butt Weld† Galv. %	2½ & 3 in. Butt Weld† Black %	2½ & 3 in. Butt Weld† Galv. %	a 3½ to 4 in. b Continuous	
Atlanta	$101.00	$1.44	$2.42	....	....	....	....	....	....	....	....	Mill									
Baltimore	109.00	1.46	2.42	.546	1.053	4.275A	11.3775A	178.20	274.80	90	2.45	Lorain, Ohio	15 25a	16 0c	40 0	26 25	40 0	21 75	3.75a	3.75a	
Birmingham	93.00	1.44	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25m	2.75m	Aliquippa, Pa.	10 25a		40 0	22 25	40 0	20 75	3.5c		
Boston	113.00	1.46	2.20	.553uzz	1.0665uzy	4.41uzy	11.90uzy	187.80y	289.20y	1.55mg	3.80mg	Sparrows Pt., Md.			38 0				6.25bb		
Chicago	107.00	1.44	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80	Benwood, W. Va.	3½ to 6 in. Lap Weld† Black % 33 0a	3½ to 6 in. Lap Weld† Galv. % 28 0a	3½ to 6 in. Butt Weld† Black % 34 75c	3½ to 6 in. Butt Weld† Galv. % 32 0ab	2½ & 3 in. Butt Weld† Black % 40 0	2½ & 3 in. Butt Weld† Galv. % 26 25	a 3½ to 4 in. b Continuous 13 75a		
Cincinnati	106.00	1.46	2.29	.567y	1.093y	4.32y	11.175y	164.40	254.10	.75m	2.80m	Youngstown, O.					40 0	22 75	13.75a		
Cleveland	108.00	1.46	2.29	.49z	.945z	3.96z	10.68z	158.00m	245.65m	.75m	2.95m	Indiana Harbor, Ind.					39 0	21 75	13.5c		
Dallas	112.00	1.46	2.54	.436	.822	3.234b	9.17b	.....	.....	.49	1.60	Sharon, Pa.					40 0	20 75	13.75a		
Denver	115.00	1.55	2.54	.43dd	.74dd	3.18dd	....	.....	.....	.74m	2.50m	Wheatland, Pa.					40 0	20 75	13.75a		
Detroit	108.00	1.46	2.29	.72	1.39	5.58	14.91	240.00m	360.00m	.80	3.20	Etna, Pa.					40 0	19 25b	13.75a		
Kansas City	113.00	1.46	2.29	.515	.92	3.64	9.20	216.70	465.00	.70g	3.00g	Fontana, Calif.					40 0b	14 75b	6.25bb		
Los Angeles	124.00	1.53	2.29	.51f	1.07f	5.24f	13.06f	228.20f	348.90f	.95	2.75ff										
Minneapolis*	112.00	1.50	2.42	.72mo	1.32mo	5.32mo	....	.....	.....	1.36A	3.87A										
Montreal	115.00	....	....	.85z	1.50z	5.25z	....			1.17j	3.11j										
New Orleans	101.50	1.44	2.42	.513	.93	5.15	....	265.00bb	455.00bb	.65	2.29										
New York	111.35	1.46	2.20	.62	1.20	4.81	12.60	.....	.....	1.15	2.50										
Philadelphia	110.00	1.44	2.20	.65	1.25	4.95A	12.65A	300.00‡	350.00‡	1.55A	3.75A										
Pittsburgh	109.00	1.46	2.20	.428m	.794m	2.97m	7.92m	149.00	232.00	1.05A	2.80A										
St. Louis	112.00	1.46	2.29	.51	.93	3.65	9.21	160.00l	360.00l	1.20l	2.70Al										
San Francisco	122.00	1.55	2.29	.61d	1.20d	5.03d	12.57d	240.00l	400.00l	.73	3.02										
Seattle	124.00	1.55	2.42	.515	.91b	....	....	150.00e	.....	1.85ee	2.58ee										

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* SS361-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *h* Reinforced, ASTM C75–41. *i* Reinforced, ASTM C76–37. *j* Centrispun. No. standard specifications in Can. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13–40. *v* C.L.f.o.b. origin, freight allowed. *z* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa Extra strength ASTM C–300–50.* A standard strength. * 6", $1.67 per ft.; carlots, F.o.b. track Class 150. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL delivered, f.o.b. truck. *ee* 1% off for cash. *ff* 21.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09. 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. black, + 25.75, galv. + 57.0; 1½ in. black, + 25.75, galv. + 56.5, 1½ in. black, + 19.25 galv. + 52.75; *Lap Weld* — 2½ in. to 3½ in. black + 26.25, galv. + 55 5; 4½ in. to 8 in. black + 23.0, galv. + 50.75. Freight rates to destination to be added to name delivered price.

† Threaded and coupled.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† **$75.00**	**$78.00**	**$69.00**	**$71.00**	**$75.00**	**$78.00**	**$77.00**	.....	.....
Baltimore	* **91.00**	**95.00**	**77.50**	**77.50**	**82.00**	**92.00**	**112.00**	.....	.....
	102.00g	*102.00g*	*102.00g*	*102.00g*	*102.00g*	*102.00g*	*106.00*	*$120.00*	*$120.00*
Birmingham	† **83.50**	**83.50**	**70.50**	**80.50**	**83.50**	**85.50**	**95.50**	.....	.....
	85.50	*85.50*	*80.50*	*79.50*	*78.50*	*78.50*	*85.50*	*85.50*	*85.50*
Boston	**101/106a**	**104/110a**	**95/101e**	**96/106e**	**98/110a**	**100/112a**	.....	.....	.....
	96.00e	*96.00*	*102/104*	*102/104*	*102/104*	*102/104*	*110.00*	*108/112*	*108/112*
Chicago	** **100.00**	**105.00**	**92.00**	**100.00**	**101/102**	**105/106**	**105.00**	.....	.....
	100.00	*101/102*	*104/105*	*108.00*	*108/110*	*108/110*	*110.00*	*110.00*	*110.00*
Cincinnati	* **99.00**	**105.00**	**88.00**	**98.00**	**105.00**	**110.00**	**122.50**	.....	.....
	109.50	*109.50*	*111.50*	*110.00*	*111.50*	*109.50*	*138.50*	*138.50*	*138.50*
Cleveland	** **97.00**	**101.00**	**86.00**	**92.00**	**98.00**	**101.00**	.....	.....	.....
			99.00	*99.00*	*101.50*	*101.00*	*115.00*	*115.00*	*115.00*
Dallas	k† **78.00**	**80.00**	**69.00**	**58.00**	**59.00**	**59.00**	**98.00**	.....	.....
Denver	*	*Not in stock*	*137.00*	*138.00*	*134.00*	*136.00*	*139.00*	*135.00*	*135.00*
Detroit	‡ **110.00**	**115.00**	**101.00**	**110.00**	**114.00**	**118.00**	.....	.....	.....
	101.50	*102.50*	*110.50*	*111.25*	*110.25*	*109.00*	*118.75*	*122.50*	*122.50*
Kansas City	* **122.00**	**122.00**	**122.00**	**122.00**	**122.00**	**122.00**	.....	.....	.....
	122.00	*122.00*	*122.00*	*122.00*	*122.00*	*122.00*	*147.50*	*157.50*	*157.50*
Los Angeles	l *96.00*	*96.00*	*96.00*	*96.00*	*96.00*	*96.00*	*114.00*	*124.00*	*114.00*
Minneapolis	# *130.00*	*130.00*	*135.00*	*135.00*	*135.00*	*135.00*	*150.00*	*150.00*	*150.00*
Montreal	ab85.00	90.00	85.00	90.00	100.00	100.00	.....	.....	.....
	175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*170.00*
New Orleans	† **100.00**	**100.00**	**92.50**	**85.00**	**90.00**	**94.00**	**118.00**	.....	.....
	† *85.00*	*95.00*	*95.00*	*90.00*	*95.00*	*92.00*	*100.00*	*120.00*	*112.00*
New York	j **109/114**	**112/117**	**110/115**	**115/120**	**120/125**	**125/130**	**150/160**	.....	.....
				Range from $115.00 to $120.00			*130/145*	*144/155*	*144/155*
New York	** **98.00**	**100.00**	**82.00**	**95.00**	**96.00**	**99.00**	**125.00**	.....	.....
	98.00	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*110.00*	*120.00*	*120.00*
Philadelphia	‡		**Range from $114.00 to $127.00**				**114/127**	.....	.....
			Range from $125.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		**Range from $90.00 to $95.00**			**110/120**	**110/120**	.....	.....
			Range from $110.00 to $120.00			*130/140*	*130/140*	*140/155*	*145/155*
St. Louis	fc**115.00e**	**115.00e**	**106.00d**	**112.00e**	**116.00e**	**121.00e**	.....	.....	.....
	.....	.....	*110.00i*	*118.00e*	*118.00e*	*118.00e*	*195.00e*	*195.00*	*195.00*
San Francisco	A† *66.00*	*68.00*	*70.00*	*70.00*	*69.00*	*68.00*	*67.00*	*70.00*	*70.00*
Seattle	† *80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*85.00g*	*85.00g*	*85.00g*

	LONG LEAF Y. P.		PLYWOOD	
	Merchantable grade up to 20 ft.		Rail freight increment (See note for base price)	
	2x12 Rgh	12x12 Rgh	⅜"	¾"
Atlanta	.....	.....	$22.32	$27.24
Baltimore	**$155.00**	**$155.00**	25.92*	31.60*
	.....	.....	.....	.....
Birmingham	**115.50**	**155.50**	21.78	26.58
	.....	.....	.....	.....
Boston	.....	.....	25.92*	31.60*
	.....	.....	.....	.....
Chicago	**134.00**	**134.00**	22.45*	27.37*
	.....	.....	.....	.....
Cincinnati	**145.00**	**145.00**	25.00*	30.48*
	.....	.....	.....	.....
Cleveland	.....	.....	25.37*	30.93*
	.....	.....	.....	.....
Dallas	**108.00**	**98.00**	18.72	22.80
Denver	.....	.....	13.92	16.98
Detroit	.....	.....	25.00*	30.48*
	.....	.....	.....	.....
Kansas City	.....	.....	16.56	20.16
	.....	.....	.....	.....
Los Angeles	.....	.....	16.61*ab	20.25*ab
Minneapolis	.....	.....	19.89*	24.25*
Montreal	.....	.....	.....	.....
	.....	.....	.....	.....
New Orleans	**148.00**	**140.00**	18.72	22.80
	210/240	**210/240**	25.92*	31.60*
New York	.....	.....	.....	.....
	190.00	**190.00**	.....	.....
Philadelphia	**200/210**	**200/210**	25.92*	31.60*
	.....	.....	.....	.....
Pittsburgh	**110/120**	**115/125**	25.92*	31.60b
	.....	.....	.....	.....
St. Louis	.....	.....	18.72	22.80
	.....	.....	.....	.....
San Francisco	.....	.....	12.22*a	14.91*a
Seattle	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *l* 8–10 ft. lengths. *n* ⅛ #1, ⅛ #2 & ¼ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅜", $159.00; on ½", $181.00. Exterior plyform ⅝" $179.00, ¾" $203.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a, Single or Double Thickness, A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2315
Baltimore	76%d	78%d	.2315
Birmingham	83%	83%	.1790
Boston	79–10%	79–10%	.2315
Chicago	78%	78%	.2315
Cincinnati	78%	78%	.2315
Cleveland	78–10–10%	78–10–10%	.2715
Dallas	75%	75%	.2390
Denver	81–5%	81–5%	.2365
Detroit	78–10–10%	78–10–10%	.2315
Kansas City	80–10%	80–10%	.2365
Los Angeles	75%	80%	.2340
Minneapolis	78–10%	78–10%	.2365
Montreal	40–5%bc	40–10–5%b	21.60hi
New Orleans	78%	77%	.2365
New York	82–10%	82–10%	.3975g
Philadelphia	78%	80%	.2315
Pittsburgh	82%	82%	.2040
St. Louis	80–10%	80–10%	.2365
San Francisco	70%	70%	.2315
Seattle	75%	78%	.2340

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass; *a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $23.35. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.179	$0.2115	$0.2315
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.184 – .1915	.2165– .224	.2365– .244
Rocky Mtn. States	.184 – .1965	.2165– .224	.2365– .249
Pacific N. W. States	.1815– .194	.214 – .2265	.234 – .2465
Pacific S. W. States	.179 – .1865	.2115– .214	.2315– .2365

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.58	..
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt	8-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt	8-in.	80 to 85-ft.	.83/.93	.94
14-in.— 2-ft. from butt	8-in.	85 to 89-ft.	....	1.00
14-in.— 2-ft. from butt	8-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6'x8"x8' Untr.	6'x8"x8' Tr.	7'x9"x8'6" Untr.	7'x9"x8'6" Tr.
Boston	Oak	.....	.....	.....	.....
	Pine	.....	.....	.....	.....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	...	4.00a	.....	5.00a
Los Angeles	Douglas Fir	.....	.....	.....	.....
	Redwood	.....	.....	.....	.....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	3.04	...	3.85	.....
	Red Oak	2.94	3.60a	3.67	4.68a
	Sap Pine or Cypress	3.41a	.....	4.44	.....
San Francisco	Douglas Fir	2 20e	3.25af	2.92bf	4.30eaf
Montreal	Birch or Maple	....h	... h	....h	....h

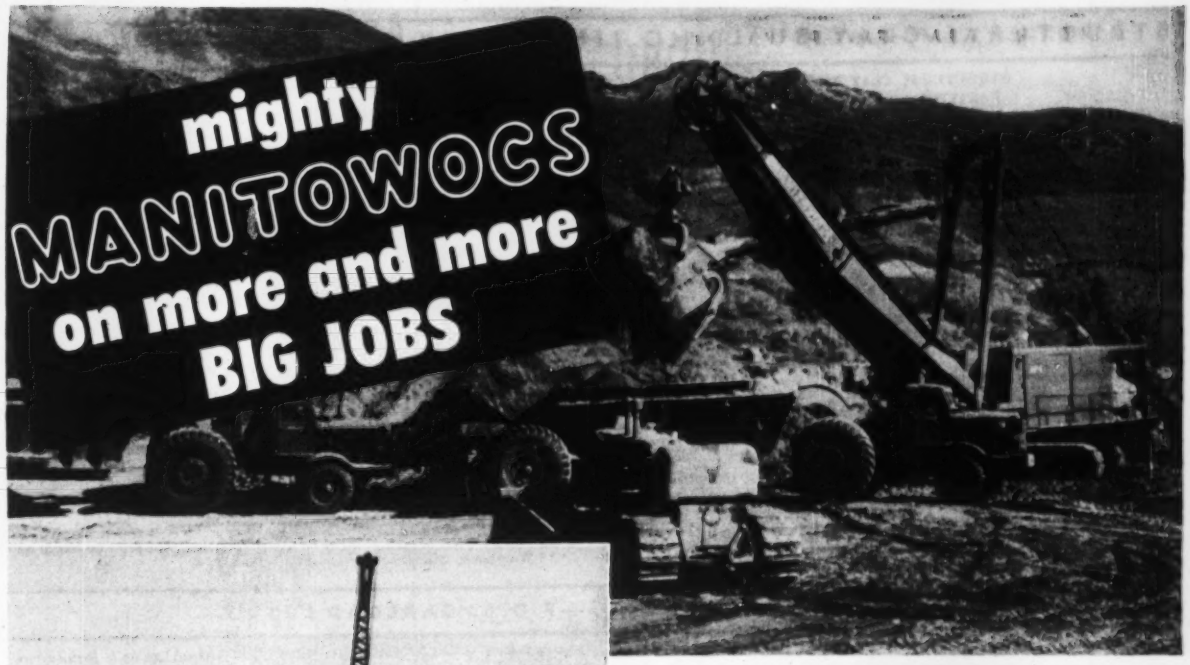
Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

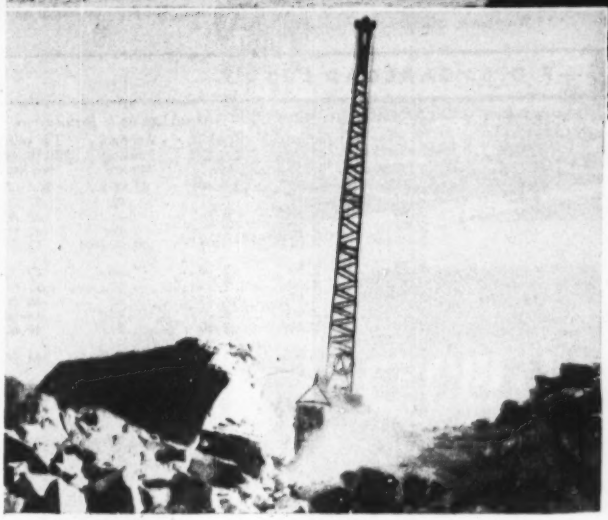
Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.10
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

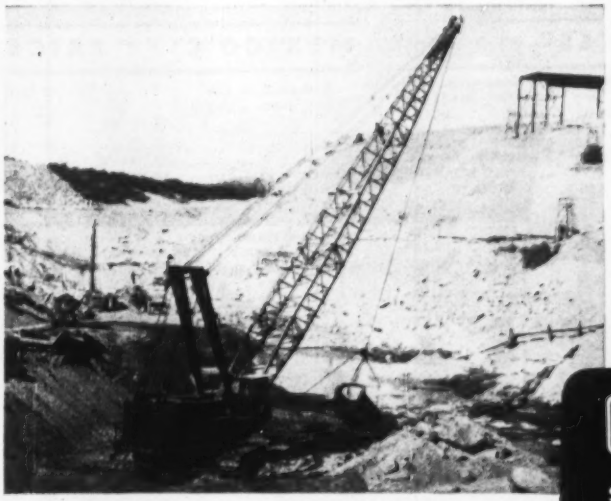
mighty MANITOWOCS on more and more BIG JOBS



PALISADES DAM — Two Model 4500's owned by J. A. Jones and C. H. Tomkins each handling over 10,000 yds. in 20 hr. shifts.



CHIEF JOSEPH DAM — Model 4500 Dragline owned by Columbia River Constructors, on a really tough excavation job at this huge dam near Bridgeport, Wash.



FOLSOM DAM — Model 4500 Dragline owned by Merritt-Chapman & Scott-Savin, loading trucks. Another Manitowoc 3900 also on job.

There's a big switch to Manitowoc all over the country — big jobs, small jobs — big contractors, small contractors — are all replacing with mighty Manitowocs.

They've found what they're looking for — the power and speed for big yardage — the extra heavy, rugged construction for long life — the simplicity of design for lower operating costs — the quick convertability for greater versatility — the ease of operation for operator comfort and productivity.

No other excavator can match a Manitowoc in performance — because no other excavator has the built-in features and extra values found in a Manitowoc.

May we prove it to you? Send for catalogs on the mighty Manitowocs, now. Manitowoc Engineering Corp., Manitowoc, Wisconsin.

MANITOWOC

SHOVELS 1-5 YD. — Speed-crane — CRANES 18-100 TON

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$195.00	$207.50	$247.50	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$17.50
Baltimore	183.00	195.00	366.00	415.00	541.00	618.00	36.00*k*	41.00*k*	30.00	21.00	....
Birmingham	126.00*p*	142.00*p*	237.00*p*	284.00*p*	.....	.....	23.50*ff*	28.00*gg*	26.37	17.10	....
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	34.50*p*	37.50*n*	30.00†	28.00†	*
Chicago	135.00	145.00	280.00	... ...	.....	. .	23.00	25.00	30.80	26.00	....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	34.50*j*	46.00*j*	26.37*j*	24.62*j*	.....
Cleveland	172.00**	183.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	118.00	.....	.....	. . .	. . .	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	127.75	136.25	255.55	.....	317.25	362.60	35.25*cc*	33.60*cc*	32.00	30.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	25.75	26.00	30.50	24.50	27.00
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	24.50§	.....	34.00	34.00	35.00
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*wp*	.....	.....	32.00*wp*	36.00	38.00*bbe*	28.00*bbe*	40.00*bbde*
Montreal	150.00*aq*	162.50*au*	300.00*au*	.....	.....	.....	31.00	41.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	138.70*h*	147.90*h*	203.40*ch*	221.90*hn*	.....	.....	35.00	.....	36.00	32.00	.
Philadelphia	126.30	134.80	252.60	302.74	361.35	.....	32.00	42.00	25.00	23.00	2.97
Pittsburgh	112.00	117.00	180.00	216.00	279.00	317.00	36.00	46.00*y*	25.00	23.00	2.97*m*
St. Louis	139.00*cc*	160.00*cc*	322.00*cc*	395.00*cc*	.....	.....	40.00*al*	36.25*z*	.85*aa*	.65*aa*	1.10*aaspes*
San Francisco	156.85*a**	177.10*a**	235.30*dda**	.....	.....	.....	37.00	.....	26.60	26.60	2.65*m*
Seattle	175.00*cc*	190.00*cc*	.....	190.00*ccw*	.....	.....	39.00*s*	49.00*s*	37.50*hh*	1.45*ll*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard. ‡ Per 60 lb. sack, no incr., ton price no longer quoted. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$17.75	$28.275	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	17.50	27.90	2.65	4.10	3.22	2.50	4.17	4.17	.42	37.00
Birmingham	17.75	28.275	3.90	3.40	....	2.80	2.75	2.75	....	40.50*ee*
Boston	17.50	27.90	....	....	....	2.67*gg*	2.79*aa*	2.79*aa*	.42*g*	42.00*g*
Chicago	17.50	27.90	....	..	...	2.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bb*	43.00‡
Cincinnati	17.50	27.90	..	....	....	2.50	2.50	2.50	.42*y*	42.38
Cleveland	17.50	27.90	2.39*pgg*	2.88*gg*	2.37*gg*	2.90*g*	2.90*o*	2.90*o*	.43*y*	37.00*hh*
Dallas	17.75	28.65	....	4.05	....	3.50*g*	3.75*o*	4.35*o*	.36	46.00
Denver	18.00	28.40	3.07	5.15	2.87	3.31*o*	2.40*o*	2.40*o*	.43*ff*	44.00
Detroit	17.50	27.90	2.38	3.40	2.50	2.75	2.50*f*	2.50	.51	40.00
Kansas City	17.50	28.02	....	2.71*ya*	2.65	2.50	2.50*o*	2.50*o*	.313*	48.00
Los Angeles	17.50	28.15	3.30*	4.50*	4.20*	2.97*	2.01*e*	*l*	.44*	*l*
Minneapolis	17.50	29.88/28.02	....	....	....	2.40*idd*	2.50*hidd*	2.50*hidd*	.36*idd*	37.00*r*
Montreal	....	20.70	2.95*D ll*	4.05*ll*	3.35*F ll*	4.82*t*	3.65*tf*	3.65*tf*	1.24*kt*	3.78*kt*
New York	17.50	27.90	....	....	....	2.50	2.50*o*	2.50*o*	.38*x*	37.00*
Philadelphia	17.50	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	17.50	27.90	2.65	2.85	3.15	2.59	2.87*o*	2.87*o*	.33	42.00
St. Louis	17.50	27.90	....	....	....	2.50	2.50*h*	2.50*h*	.33*y*	38.00
San Francisco	17.50	28.15	2.40	....	3.40	2.95	4.00*aa*	....	.49	....
Seattle	17.50	28.40	2.96*m*	2.80*m*	....	3.58*mgcc*	3.05*hmcc*	....	.59*mcc*	52.00*jmc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 5-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bc* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt. in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight. *D.* Std Black. *E* Ready-mixed, *F.* Over 80% ferric oxide. * Aver. wt. approx. 500 lbs

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.90	$2.35	$2.60	$2.25	$2.75	$2.60	$2.90	$1.13	$1.13
Baltimore	3.20*d*	2.58	3.125*i*	2.85/3.00	2.75	2.875	2.875*i*	1.565*i*	1.565*i*
Birmingham	3.00	2.24*D*	2.50	2.16	2.52	2.75	2.65	1.225	1.325
Boston	3.08*	2.625	2.82	3.00	3.05	3.00*d*	2.90*d*	1.99*	1.99*
Chicago	3.25*k*	3.00*m*	3.05*	2.80	3.43*	3.212*f*	3.09*	2.20*m*	2.20*m*
Cincinnati	3.12	2.625	2.815	2/2.50/3.05	2.90	2.90	2.90	1.92	1.92
Cleveland	3.12	3.075*d*	3.075	3.075	3.075	3.075	3.07*C*	2.325	2.325
Dallas	3.4375	2.4875	2.625	2.50	3.437	2.75	2.7625	1.325	1.35
Denver	3.45	2.625	2.50	2.63	3.30	2.90	2.82	1.725	1.725
Detroit	3.18*	2.93*	3.18*m*	2.90	3.31/*	3.05	3.00*	2.18*	2.18*
Kansas City	3.50	2.55	2.68	2.515/2.76	3.175	2.70	2.90	1.88	1.88
Los Angeles	3.175	2.57	2.77*	2.45	3.437	2.75	2.90	1.94	1.94
Minneapolis	3.05	2.55	2.72	2.50	2.90	2.71*n*	2.70	1.82	1.82
New Orleans	2.95	2.32	2.65	2.50	2.525	2.65	2.65	1.225	1.225
New York	3.85*hr*	3.24*hB*	3.50*B*	3.50*B*	3.95*A*	3.795*as*	3.4425*bp*	2.05	2.05
Philadelphia	3.61*i*	2.90	3.32*i*	3.30	3.475*h*	3.45*	3.29*	1.75	2.05
Pittsburgh	3.40	3.00	2.875	3.00	3.15	3.00	3.00	1.90	1.90
St. Louis	3.55*c*	2.90*h*	2.90	2.95	3.00	3.09*e*	2.90*B*	1.97	1.97
San Francisco	3.25*w*	2.705	2.85	2.56	3.125*	3.00	2.90	1.85	1.85
Seattle	3.30	2.58	2.78	2.71	3.15	2.80	2.75	2.18	2.14
Montreal*†	1.90	1.70	1.80	1.60	1.90	1.80	1.85	1.20	1.20

* Cost of living bonus now included in basic wage. *f* Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vac. stamp fund for bricklayers; 4% for electricians plus 7½¢ WF. *d* Incl. 10¢ H&WF. *e* Incl. 6¢ H&WF. *f* Incl. 6% WF. *g* Incl. 11½¢ WF. *h* $2.45 homes & housing plus 5¢ VF. *i* Incl. 3½% WF and 15¢ PF. *j* Incl. 9¢/hr WF. *k* Incl. 7½¢/hr WF. *l* Incl. 4% VF. *m* Incl. 5¢/hr WF. *n* Incl. 6¢/hr WF. *o* Incl. 3% WF. *p* Incl. 3% WF, 3% PF. *r* Incl. 3% WF and 20¢ PF. *s* Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. *t* Incl. 7½¢ H&WF. *u* Incl. 1½% WF. *v* Incl. 10¢ WF. *w* Negotiating. *x* Await. WSB appr. *y* Incl. 8% WF. *z* Incl. 7½¢ IF, 5¢ H&WF. *A* Incl. 10¢ WF, 10¢ PF & 10¢ VF. *B* Incl. 3% WF, 6 PH. *C* Incl. 7¢ IF. *D* Dec. revised. *E* Plus 5% WF, plus travel pay per day.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Nov.'52	Dec.'52
Common Wages—Building (8 hr. day)	av. per hr.	.83*	1.06*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.93*	1.25*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	2.25*	2.25*
Bricklayers (8 hr. day)	av. per hr.	2.25*	2.25*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50*	1.50*
Struct. Steel Shapes 3"-15" x 12 meters	per metric ton	1,193.13	1193.13
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1,355.67	1355.67
⅜" x 11 meters	per ton	1,344.46	1344.46
½" x 11 meters	per ton	1,333.25	1333.25
⅝" x 11 meters	per ton	1,322.04	1322.04
¾" x 11 meters	per ton	1,322.04	1322.04
1" x 11 meters	per ton	1,322.04	1322.04
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	50.00	50.00
Rose Gravel	per tr. load	47.00	47.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
Mex. Sacred Fir (OYAMEL)	per M ft.	750.00	750.00
1st Class Pine	per M ft.	1400.00	1400.00
2nd Class Pine	per M ft.	1100.00	1100.00

* Increase by 1/6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $2.942 **ENR Common Average:** 1.81\frac{7}{7}$

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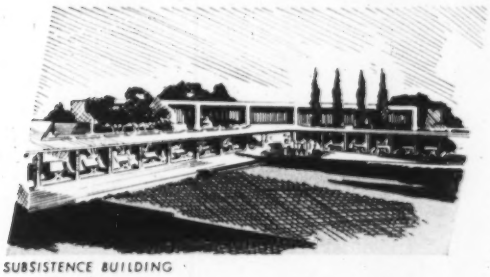

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Here are those Ceco served in the nation-wide military expansion program.
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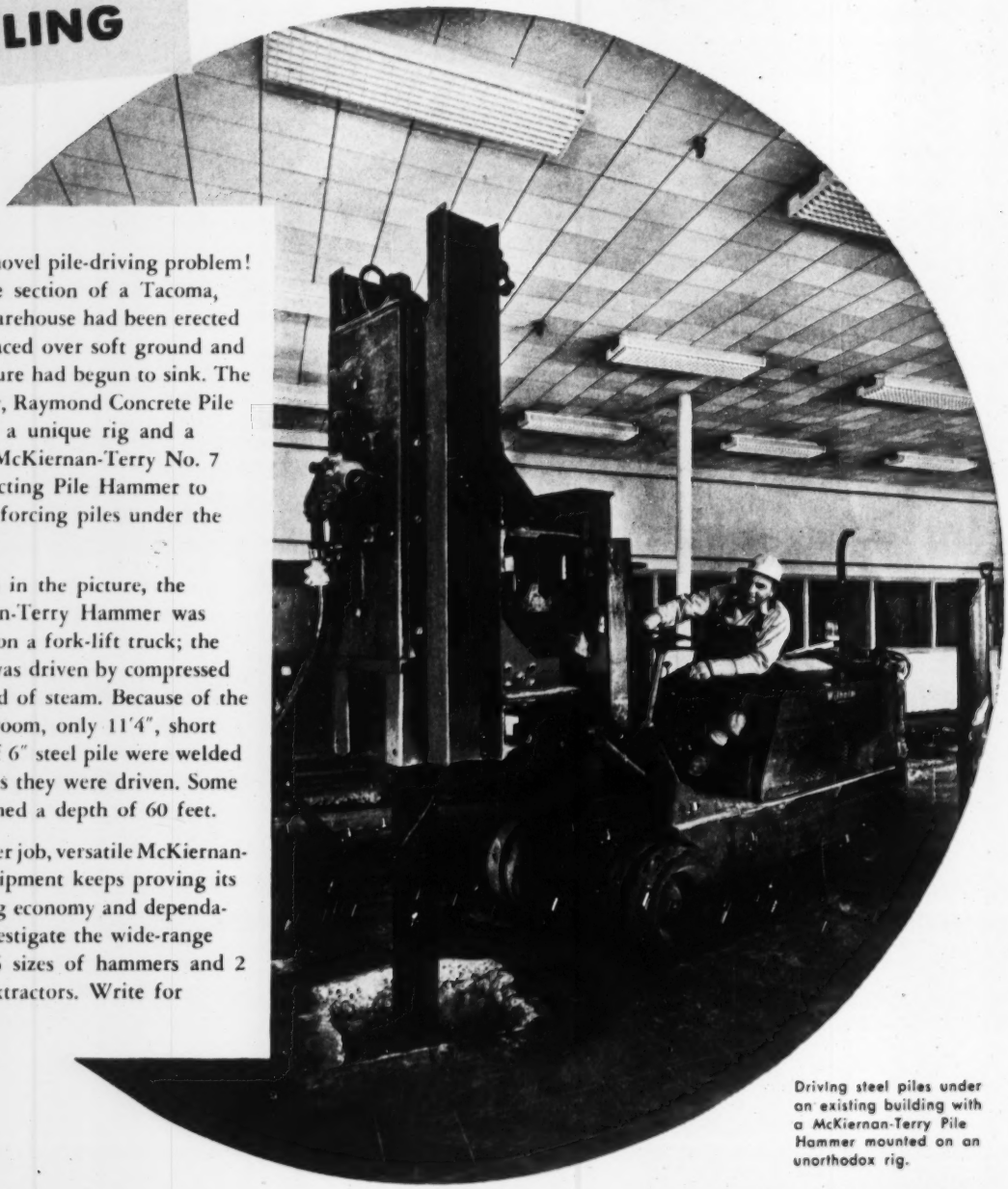

Here's a novel pile-driving problem! The office section of a Tacoma, Wash., warehouse had been erected on fill placed over soft ground and the structure had begun to sink. The contractor, Raymond Concrete Pile Co., used a unique rig and a versatile McKiernan-Terry No. 7 Double-Acting Pile Hammer to drive reinforcing piles under the building.

As shown in the picture, the McKiernan-Terry Hammer was mounted on a fork-lift truck; the hammer was driven by compressed air, instead of steam. Because of the low headroom, only 11'4", short sections of 6" steel pile were welded together as they were driven. Some piles reached a depth of 60 feet.

On job after job, versatile McKiernan-Terry equipment keeps proving its piledriving economy and dependability. Investigate the wide-range line of 16 sizes of hammers and 2 sizes of extractors. Write for bulletin.

Driving steel piles under an existing building with a McKiernan-Terry Pile Hammer mounted on an unorthodox rig.

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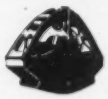

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MK 323

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **Mass., Medford**—DORMITORY—B.A. 1/15—At office Arthur Anderson, 108 Water St., Boston, Mass., men's dormitory on campus, for Tufts College, Administrative Office, President's Office, Medford, Mass. $1,065,000. Plans deposit $50 refundable. Arland A. Dirlam, 673 Boylston St., Boston, Mass., archt. CD 12/28/51.

▲ **Mass., Boston** — HOUSING — B.A. 1/16 — Boston Housing Auth., 230 Congress St., 732 housing units, Bromley Park, Roxbury, Proj. Mass 2-19, $10,250,000. Plans deposit $100, refundable. Extended date. Thomas F. McDonough, 25 Huntington Ave., Boston, archt. CD 12/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Gil Wyner Co. Inc.,** 12 Newland St., Malden, Mass. LB. $1,484,739, est. $1,000,000-$3,000,000. site utilities, roads, grading, Bedford Research Center, Eng. 19-016-53-25, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Dec. 17. CD 12/4.

▲ **Raymond Concrete Pile Constr. Co.,** 140 Cedar St., New York 6, N. Y. LB. $4,658,670. East Boston ship terminal, BOSTON, MASS. Commonwealth of Mass., Port of Boston Auth., East Boston, Mass. Bids Dec. 17. CD 11/21.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **John Bowen Co., Inc.,** 171 Boston St., Dorchester, Mass. LB. Base Bid 1 $15,416,843; Base Bid 2 $15,218,426; Base Bid 3 $15,198,375. HOUSING, Proj. Mass 2-20, Columbia Point, Dorchester, BOSTON, MASS. Boston Housing Auth., 230 Congress St., Boston, Mass. Bids Dec. 12. CD 11/17.

▲ **Thomas O'Connor Co.,** 238 Main St., Cambridge, Mass. CA Est. $1,200,000. BOILER PLANT, Bradford Sect., HAVERHILL, MASS. Robert Gair Co., Inc., 155 E. 44 St., New York, N. Y. (Correction—owner's name). CD 12/19, under CA.

† **Platt Constr. Co., Inc.,** 99 First St., Cambridge, Mass. CA. $582,000. three BARRACKS, Naval Advanced Base Depot, Spec. 34842, DAVISVILLE, R. I. P. Wks. Office, 495 Summer St., Boston, Mass. Bids Dec. 9. CD 12/15, under LB.

▲ **Samuel W. & Sumner L. Poorvu,** 27 School St., Boston, Mass., Owner Builds, $1,000,000, POSTAL TERMINAL, NEW HAVEN, CONN. Arthur Winebaum, 68 Devonshire St., Boston, Mass., archts. U. S. Post Office lessee.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
A. S. Wikstrom, Inc., Box 217, Skaneateles, N. Y., LB $3,753,517, est. $3,916,000, New York State Thruway Ontario Sect., Sub. 3, (Tyre-¾ mi. west of Montezuma) Halsey Corners-Savannah Pt. 1, S. H. 8323 4.15 mi. Throughway, 0.63 mi. access. Cont. O. T. 52-23P, E. C. 52-120, Cayuga & Seneca Counties;
Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo 2, N. Y., LB $4,073,379, est. $5,000,000. New York State Thruway, Ontario Sect. Sub. 14, (Transit Rd.-Ransom Rd.). Transit Rd. interchange, Gunville Rd.; Marginal Rds. 5.46 mi. throughway, 3.46 mi. access. Cont. O. T. 52-22. S. T. 52-23, Erie Co. Bids Dec. 18. CD 11/26.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Torrington Constr. Co., Inc., Torrington, Conn., CA $1,144,933, est. $1,275,000, 8.97 mi. Ausable Forks-Clintonville, S.H. 476, Clintonville-Keeseville, S.H. 651, FARC. 52-110, Clinton Co.;
Tully & DiNapoli, Inc., 127-50 Northern Blvd., Corona, N. Y., and **Gull Contg. Co., Inc.,** 33-15 Lawrence St., Flushing, N. Y., CA. $6,378,647, est. $7,520,000, 1.29 mi. Exp. 0.28 mi. Access Major Deegan Expressway, Cont. 6, FA. MDE 52-5, Bronx Co.;
S. J., Groves & Sons Co., Empire Bldg., Syracuse, N. Y. CA $4,998,938, est. $5,562,000, New York State Thruway Mohawk Sect.-Sub. 12BE and 12PW Indian Castle-Caroga Creek), Co. Rd. 65: Indian Castle Rd., Farm Rd.: Co. Rd. 188 and Town Rd., 8.71 mi. throughway and 3.3 mi. Acc. M.T. 52-16, S.T. 52-28, Montgomery and Herkimer Counties;
Vernon Christiana, Jr., 362 N. Genesee St., Utica, N. Y. CA $663,610, est. $709,000, 5.8 mi. Works Corners-Colbys Corners, Paul Smiths-Gabriels, S.H. 9027, FASH 52-17, FARC 52-109, Franklin Co.;
Hogeboom & Campfield, Inc., New Hartford, N. Y., CA $656,148, est. $761,000, 0.98 mi. New York State Thruway, Mohawk Sect.-Sub. 14 (Randall-Fort Hunter) Relocated Canajoharie-Fultonville, Pt. 2, SH 8371, M.T. 52-13, RC (MT) 52-107, Montgomery Co. Grand total $13,842,276. Bids Nov. 6. CD 11/10, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
The Lane Constr. Corp., 37 Colony St., Meriden, Conn., CA. $7,096,781, est. $8,585,000. 11.56 mi. thruway and 5.31 mi. acc. mi. New York State Thruway-Catskill Section-Sub 5 (Greene Co. line-Normanskill Creek); Selkirk Interchange; Stylebarrck Rd.; Beaver Dam Rd.; Clapper Rd.-Weisheit Rd.; Wample Rd.; Coeymans-Indian Fields Pt 1, SH 1468, River S.H. 193; Glenmont-Feure Bush, S.H. 367; Albany-Bethlehem S.H. 5499. C. T. 52-8P. R.C. 52-111, S.T. 52-29, Albany Co.;
Depew Paving Co., Inc., & McLain Constr. Corp., 4955 Broadway, Depew, N.Y. CA. $2,913,183, est. $3,510,000, 2.14 mi. thruway and 0.94 mi. N.Y. State Thruway-Ontario Sect.-Sub. 13, Union Rd.-Transit Rd.; Cayuga Rd., Youngs Rd. and 2 marginal roads. O. T. 52-17, S. T. 53-30, Erie Co. Bids Nov. 20. CD 11/24, under LB.

▲† **Stock Constr. Corp.,** 3721 Grand Central Terminal Bldg., New York 17, N. Y. CA. $1,957,700, aerial reconnaisance laboratory, Griffiss Air Force Base, ROME, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids 9/14/51.

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 N. Office Bldg., Harrisburg.
Nello L. Teer, Box 1131, Durham, N. C., LB $4,058,716, est. $1,640,000, constr. 36,901 ft. crushed aggregate base with bit. surf., 14 rein.-con. and 3 steel structures, Rte. 202-100 By-pass around West Chester, Chester Co.;
Hempt Bros., R.D., Camp Hill, Pa., LB $713,547, constr. 9,101 ft. con. pavement 24 ft. wide on each side of 4 ft. divisor, I-deck I-beam and one rigid frame rein.-con. bridge, sect. of York Expressway, Cumberland Co.;
Larry Constr. Co., Pittsburgh, Pa., LB $517,764, constr. five rein.-con. retaining walls, substructure of bridge over 2nd Ave. 2,226 ft. a sect. of Penn-Lincoln Parkway Proj., Allegheny Co.;
Dinardo, Inc., 331 Bouquet St., Pittsburgh, Pa., LB $884,395. constr. portion of downtown interchange on Penn-Lincoln Parkway, Incl. alterations 22nd St. bridge and 1,153 ft. c.-conc. pavement, Allegheny Co. Bids Dec. 19. CD 11/18, 11/19, 11/21, 12/5.
▲ **Moyer Bros.,** 2605 Beale Ave, Altoona, Pa., LB $1,048,000, Contr. 10 sewage disposal plant;
Hadley Contr. Co., 1213 Wood St., Phila., Pa., $297,800. Contr. 11, structural, ALTOONA, PA. Municipal Auth., City Hall, Altoona, Pa., Bids Dec. 11. CD 10/24.

▲† **Williams Constr. Co., Inc.,** Middle River, Md. CA, $2,442,767 on alternates, aircraft parking and taxi service space, Dover Air Force Base, DOVER, DEL. U. S. Eng., 121 N. Broad St., Phila., Pa. Bids Dec. 3. CD 12/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The Easterly Co., Ltd.,** 49 E. 8th St., New York, N. Y., CA $5,000,000. 6 story APARTMENTS, on site bounded by 8 and 9 Sts., Broadway and University Pl., NEW YORK, N. Y. Sheridan Assoc., 20 Broad St., New York 5, N. Y. CD 9/8/50.

▲ **S. S. Silberblatt, Inc.,** 25 W. 45 St., New York 19, N. Y. CA $4,157,100, general constr.;
Jarcho Bros., Inc., 306 E. 45 St., New York 17, N. Y. CA $512,447, heating and ventilating, for Forest HOUSES, Proj. No. NYS 57, Sect. 1, incl. Bldgs. 1 to 7 (inclusive) in area bounded generally by E. 166 St., Tinton Ave., E. 165 St., Jackson Ave., E. 163 St., and Trinity Ave., Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids Oct. 21. CD 10/23 under LB.

▲ **Paul Tishman Co., Inc.,** 21 E. 70 St., New York 21, N. Y. CA $3,638,900, general constr., for Jefferson HOUSES, Proj. No. NY 5-16, Sect. 1, incl. Bldgs. 1 to 6 (inclusive) as well as boiler room, coal storage garage, community center and children's center in area bounded generally by W. 115 St., 1st St., E. 113 St., 2 Ave., Manhattan Boro, NEW YORK. New York City Housing Auth., 63 Park Row, New York 7, N. Y. Bids Oct. 15. CD 10/24, under LB.

▲ **Christensen & Neilsen,** 114 Union St., Schenectady, N. Y., CA. Approx. $1,764,000, 72 room HOTEL addn., SCHENECTADY, N. Y. Schenectady Hotel Co., Inc., Washington Ave., Schenectady, N. Y. Awarded Dec. 17. CD 12/15.

▲ **Berne Constr. Co.,** 581 Wilmot Rd., New Rochelle, N. Y., CA. $3,500,000. 261 HOUSES on tract on Mountaindale Rd. off Tuckahoe Rd., YONKERS, N. Y. Westview-at-Westchester Homes, c/o contractor.

▲ **J. Rich Steers, Inc.,** 17 Battery Pl., New York, 4, N. Y. CA, $4,669,475, WAREHOUSE DEVELOPMENT, Incl. Buildings No. 152, 153 and 154 exten. wharf, paving, install railroad trackage, utilities, etc. on southeast end of City Channel, Cont. PN-170.010, PORT NEWARK, N. J. The Port of New York Auth., 111 8 Ave., N. Y., 11. N. Y. Bids Dec. 9. CD 11/25.
United Constr. Co., 1204 Lincoln Ave., Pittsburgh, Pa. CA. $896,000. 8 bldgs., 130 family HOUSING, CLAIRTON, PA. Allegheny Co. Housing Auth., County Office, Pittsburgh, Pa. Bids Oct. 9. CD 10/21, under LB.
McCloskey & Co., 3401 Liberty Ave., Pittsburgh, Pa., CA. $750,000. 3 story, osmnt. L-shaped, 223x118x100 ft., steel brick, concrete, stone CHURCH, SCHOOL, CONVENT CLAIRTON, PA. St. Claires Roman Catholic Congregation, 314 Wilson St., Clairton, Pa. CD 12/16.

▲† **Hughes Foulkrod Co.,** Schaff Bldg., 1505 Race St., Phila., Pa., CA. $1,431,739, 200x1,200 ft., concrete, block, structural steel, precast concrete general purpose WAREHOUSE, Serial No. ENG 18-020-53-30, Letterkenny Ordnance Depot, LETTERKENNY, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Dec. 5. CD 11/22.

▲† **Irwin & Leighton,** 1505 Race St., Phila., Pa., LB $1,187,700, ORDNANCE BUILDING, DEPOT MAINTENANCE DIVISION BLDG., roads, apron, steam plant, spur tracks, Serial ENG 18-020-53-34 Letterkenny Ordnance Depot, LETTERKENNY, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Dec. 17. CD 11/26.

▲ **Bendik Constr. & Eng. Co.,** 6 Gilmore St., Uniontown, Pa., CA Approx. $1,000,000. 15 bldgs., 100 family HOUSING, Dunbar Creek Village, Redstone Twp. near UNIONTOWN, PA. Fayette County Housing Auth., Uniontown, Pa. Bids Nov. 26. CD 11/3.
Morrow Bros. Inc., 2315 N. Charles St., Baltimore 18, Md. LB $883,200. 3 story, 110x355 ft., brick, concrete, steel, Frederick Road Elementary SCHOOL, BALTIMORE, MD. City Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore, Md. Bids Dec. 17. CD 12/3.

† **Merando, Inc.,** 813 4 St. N. E., Wash., D. C. LB $636,724. ADMINISTRATION and OPERATIONS BLDG. addn. and BLDG. 31 addn., addnl. facilities, Naval Radio Receiving Station, NOY 70519, CHELTENHAM, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids Dec. 17. CD 12/3.
Allen F. Feeser, Taneytown, Md. LB $593,500. 3 story, brick, concrete, steel, cinder block elementary SCHOOL, Winter St., HAGERSTOWN, MD. Washington County, Bd. Educ., Court House, Hagerstown, Md. CD 11/21.
▲ **Ajax Constr. Co.,** 925 15 St. N.W., Wash., D. C., Owner Builds. $1,000,000, 8 story, brick, concrete

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

DIFFICULT FOUNDATION WORK

- FOUNDATIONS
- CAISSONS
- UNDERPINNING
- SHEETING & BRACING
- PILING & SHEETING
- SHORING
- COFFERDAMS
- MOVING STRUCTURES
- SPECIAL SERVICES

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OFFICE, STORE and GARAGE, 1145-19 St. N.W., WASH., D. C. Richard Roth, 575 Madison Ave., New York, N. Y., archt.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn. 1340 Wilson St., Charleston,

Bates & Rogers Constr. Corp., 600 W. Jackson Blvd., Chicago, Ill., LB, $2,858,043 and $2,742,723 alternate bids, ½ mi. tunnel connecting Paint Creek and Cabin Creek Valleys;

Nello L. Teer Co., Box 1131, Durham, N. C., LB, $2,952,435, grading, draining, clearing 3 mi. land from north portal of proposed tunnel, toward Charleston, Kanawha Co. Bids Dec. 18. CD 12/5.

▲ † **McCorstin Constr. Co.**, 3601 W. Vickery St., Fort Worth, Tex., CA. $2,183,127, clearing Reservoir Parcels 2, 3, 5, 6 and 7, Jim Woodruff Dam, Inv. 53-22, FLORIDA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids Nov. 26. CD 10/28.

▲ **Florida**—State Hy. Dpt., Tallahassee,

Allied Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill. and **Industrial Contg. Co. & Assocs.**, Jacksonville, Fla. LB, $431,213, substructure;

Foster & Creighton Co., American National Bank Bldg., Nashville, Tenn., LB, $2,005,988, superstructure for Myrtle Ave. Overpass in Jacksonville on State Rd. 5, UI 003-7 (6) Duval Co. Total est. $2,800,000. Bids Dec. 19. CD 11/12.

Williams Constr. Co., 1032 13 St., Columbus, Ga., CA, $886,000 airport buildings, MARIANNA, FLA. Graham Aviation, Marianna, Fla.

▲ † **W. L. Cobb Constr. Co.**, 1102 N. 22 St., Tampa, Fla. CA, $3,164,075, airfield paving at Pinecastle Air Force Base, Inv. 53-27, ORLANDO, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Dec. 17. CD 11/12.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

Foster & Creighton Co., American National Bank Bldg., Nashville 3, Tenn. CA $742,913. viaduct and c. conc. 0.436 mi. Spring Street Viaduct (Shreveport) State Rte. 20, S.P. 53-09-03, F. A. Proj. U 412 (1), Caddo Parish. CD 11/28, under LB.

▲† **United Enterprises Corp.**, 2845 N. Roman St., New Orleans, La. LB $1,815,725, est. $875,000. hangar maintenance bldg., Lake Charles Air Force Base, Eng. 41-243-53-49, LAKE CHARLES, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Dec. 18. CD 11/6.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., LB $2,136,936. interceptor sewers, etc., CHATTANOOGA, TENN. City, City Hall, Chattanooga, Tenn. Bids Dec. 16.

G. E. Moore Co., Greenwood, S. C., CA, $791,517. WW imprvs., COLUMBIA, TENN. City, Columbia, Tenn. Bids Nov. 12. CD 11/18, under LB.

G. M. Ferris, Athens, Tenn., CA, $757,964, sanitary sewers, FOUNTAIN CITY, TENN. Fountain City Sanitary Dist., Fountain City, Tenn. Bids Nov. 18. CD 11/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Eugene Simpson & Bros., 300 Montgomery St., Alexandria, Va., CA, $887,066, Merrifield HIGH SCHOOL, Falls Church, FAIRFAX, VA. Bd. Educ., Fairfax Co., Fairfax, Va. Bids Dec. 18. CD 11/28.

K. S. K. Development Co., 64 Gillis Rd., Portsmouth, Va. Owner Builds. $750,000. 75 RESIDENCES, SOUTH NORFOLK, VA. CD 11/11.

Southeastern Constr. Co., Peoples Bldg., Charleston, W. Va., CA, $835,040, brick, steel, concrete BOILER BLDG., MORGANTOWN, W. VA. W. Va. University, Morgantown, W. Va. Bids Dec. 3. CD 12/10, under LB.

▲ **J. A. Jones Constr. Co.**, 209 Fourth St., Charlotte, N. C. CA. Approx. $1,000,000. MOTOR COURT, CHARLOTTE, N. C. Highland Hotel Co., c/o contractor.

▲ **Amite Supply Co.**, c/o Seward H. Mott Assoc., 2151 K St. N. W., Wash., D. C. Owner Builds. $8,000,000. 240 RESIDENCES, SHOPPING CENTER, etc., CHARLOTTE, N. C.

▲ **E. I. du Pont de Nemours & Co.**, du Pont Bldg., Wilmington, Del. Owner Builds. $3,000,000. Research LABORATORY, KINSTON, N. C.

▲ **Daniel Constr. Co.**, 429 Main St., Greenville, S. C. LB $1,260,000. Memorial AUDITORIUM, GREENVILLE, S. C. City, City Hall, Greenville, S. C. Bids Dec. 16. CD 11/12.

Bowen-Baggett Constr. Co., Quincy, Fla. LB, $584,479. 85 HOUSING units, BLAKELY GA., Blakely Housing Auth., Blakely, Ga. Bids Dec. 9. CD 12/15, under LB.

S. J. Curry & Co., Albany, Ga., LB, $725,500, Training SCHOOL and Elementary School addn., PELHAM, GA. City, City Hall, Pelham, Ga. Bids Dec. 18. CD 11/17.

Coite Somers Constr. Co., Vidalia, Ga., LB, $666,000. HOUSING Projects GA 132-1 and 132-2, STATESBORO, GA. Statesboro Housing Auth., Statesboro, Ga. Bids Dec. 18. CD 11/21.

Sullivan-Long & Hagerty, 800 4 Ave. N., Birmingham, Ala., LB, $726,000, 100-unit HOUSING, Project ALA 48-3, DECATUR, ALA. Decatur Housing Auth., Decatur, Ala. Bids Dec. 16. CD 12/2.

▲ **Strother-Barge Co.**, 189 Cain St. N. E., Atlanta, Ga., LB, $1,036,284, HOUSING, Project Ala 49-4 GADSDEN, ALA. Gadsden Housing Auth., Gadsden, Ala. Bids Dec. 18. CD 12/2.

M. G. Ferran, 1618 Dublin St., New Orleans, La. Owner Builds. $500,000. 50 RESIDENCES, NEW ORLEANS, LA.

▲ **McGraw Constr. Co.**, P. O. Box 272, Middletown, O. CA Est. $12,000,000. cold reduction MILL, incl. steel processing facilities, continuous cold strip pickler, both light and heavy gage zinc grip lines, ASHLAND, KY. Armco Steel Co., 1939 Armco Ave., Middletown, O. CD 12/18.

▲† **Tennessee, Alabama-Kentucky-Tennessee Valley Auth.**, New Sprankle Bldg., Knoxville, Tenn.. awarded contracts for Kingston Steam Plant, Tenn.; John Sevier Plant, Tenn.; Johnsonville Steam Plant, Ky.; Widows Creek Steam Plant, Ala.; Shawnee Steam Plant, Tenn. Total $1,858,575.

Westinghouse Electric Corp., Union Bank Bldg.. Pittsburgh, Pa., CA $765,350, for forced and induced draft fans, Kingston Steam Plant, Tenn.;

Allis-Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis., CA $630,000, supply two condensers for John Sevier Steam Plant, Tenn.;

Lummus Co., Honesdale, Pa., CA. $367,225, closed-type feedwater heaters for John Sevier Steam Plant, Tenn.;

Pennsylvania Pump & Compressor Co., Easton, Pa., CA $96,000, 10 station service air compressors for Johnsonville Steam Plant, Ky., Widows Creek Steam Plant, Ala., Kingston Steam Plant, Shawnee Steam Plant and John Sevier Steam Plants, Tenn.

▲ **Harmon Constr. Co.**, P. O. Box 1414, Oklahoma City, Okla., LB $5,871,987, HOSPITAL addn., MEMPHIS, TENN. Baptist Memorial Hospital, 899 Madison Ave., Memphis, Tenn. Bids Dec. 16. CD 12/8.

T. E. Akers & Co., 1213 Division St., Nashville, Tenn. LB $975,376. 100 HOUSING units, NASHVILLE, TENN. Nashville Housing Auth., 701 N. 6 St., Nashville, Tenn. Bids Dec. 16. CD 11/19.

MIDDLE WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O. CA. $1,863,965, est. $1,500,000. Mill Creek outfall and diversion sewer from Ohio River to Gest St. and west branch-Ohio River interceptor, CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Dec. 16, awarded Dec. 19. CD 11/25.

† **George W. Timmons Constr. Co.**, 1277 E. Broad St., Columbus, O., LB. $937,191, base bid, $976,833, Alt., bachelor officers quarters, Wright-Patterson Air Force Base, DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Dec. 18. CD 11/24.

▲† **George W. Lathrop & Sons, Inc.**, 1510 Montcalm St., Toledo, O., CA. $5,122,815, workshop, utilities, roads, railroads and central heating plant alterations, Wilkens Air Force Depot, SHELBY, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Nov. 25. CD 12/2, under LB.

▲ **INDIANA and ILLINOIS**—Indiana Toll Bridge Comn., Citizens Bank Bldg., Evansville, 17, Ind.,

Traylor Bros., Upper Mt. Vernon Rd., Evansville, Ind., LB, $2,228,768, steel Wabash Memorial River Bridge over Wabash River, Posey Co. Bids Dec. 16. CD 11/6.

▲ **INDIANA and KENTUCKY**—Indiana Toll Bridge Comn., Indiana State House, Indianapolis, Ind.,

Bates & Rogers Constr. Co., 600 W. Jackson Blvd., Chicago, Ill., LB, $1,698,670, sub-structure;

Mt. Vernon Bridge Co., Mt. Vernon, O. and **J. F. Beasley Co.**, 28 N. Wacker Dr., Chicago, Ill., LB, $2,648,277, superstructure vehicular bridge over Ohio River at Lawrenceburg, Dearborn Co., Ind. Bids Nov. 12. (Correction—location of project). CD 11/20, under LB, Indiana and Illinois.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Nelson Terrace, Inc.**, 3634 E. Broad St., Columbus, O., Owner Builds. $1,100,000. 100 HOUSING units, Nelson Terrace, Whitehall Addn., COLUMBUS, O.

▲ **English Village, Inc.**, 865 E. Broad St., Columbus, O. Owner Builds. $2,250,000. 150 HOUSING units E. Broad St. and Yearling Rd., COLUMBUS, O.

▲ **Community Builders, Inc.**, 374 N. Virginia Lee Rd., Columbus, O., CA $2,000,000. brick, steel, concrete multiple unit HOUSING, Clifton Ave. near Woodlawn Ave., COLUMBUS, O. Clifton Park Apartments, Inc., 374 N. Virginia Lee Rd., Columbus, O.

▲ **Truro Estates, Inc.**, 40 W. North St., Worthington, O., Owner Builds. $9,250,000. 1,000 HOUSING units, Glen Ave. in Marlboro Addn., COLUMBUS, O.

▲ **Biscayne Properties, Inc.**, 42 E. Gay St., Columbus O. Owner Builds. $1,000,000. 72 HOUSING units, Duxberry Ave., COLUMBUS, O.

▲ **Beaver Constr. Co.**, (Brady & Friedman) 8 E. Long St., Columbus, O. Owner Builds. $2,500,000, 150 HOUSING units, Whitehall Park, Whitehall, COLUMBUS, O.

▲ **Neal Constr. Co.**, Knoedler Rd., Pittsburgh, Pa., CA $1,750,000. 88 HOUSING UNITS, Sullivant Ave. west of Demorest Rd., COLUMBUS, O. Sullivant Gardens, Inc., c/o contractor.

Oakland Constr. Co., 8 E. Long St., Columbus, O. Owner Builds. $750,000. 56 HOUSING units, Gould Rd., COLUMBUS, O.

▲ **Shelby Constr. Co.**, 1108 Canal St., New Orleans, La. CA. Approx. $1,000,000. 100 HOUSING units in Hamilton Terrace, Whitehall, COLUMBUS, O. Hamilton Terrace, Inc., c/o contractor.

Weldon Park Corp. (James Shuman), 2043 Cleveland Ave., Columbus, O. Owner Builds. $750,000. 50 HOUSING units, Beulah Rd. between Weber Rd. and Oakland Park Ave., COLUMBUS, O.

▲ **Leonard H. Krill Co.**, 2169 E. 33 St., Cleveland, O. CA. Approx. $2,000,000. 1 story, 200x900 ft. FACTORY, Euclid Ave. and Beidler Rd., to mfg. jet-engine component parts, (Thompson Products, Inc., 23555 Euclid Ave., Cleveland, O., lessee), WILLOUGHBY, O. F. G. K. Co., NBC Bldg., Cleveland 14, O. Jules Schwartz & Assoc., 2536 Euclid Ave., Cleveland, O., archt. CD 12/18.

† **Zisken Constr. Co.**, 4430 W. Roosevelt St., Chicago Ill., LB, $838,115, Base Bid, expansion of facilities at U. S. POST OFFICE, Van Buren, Harrison and Polk Sts., CHICAGO, ILL. General Services Admin., P. Bldgs. Service, 19 and F Sts. N.W., Wash., 25, D. C. Bids Dec. 17 CD 11/11

▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. LB $8,899,000. Edward J. Jeffries HOMES, incl. eight 14 story, brick, steel apartments, 896 family units, Gibson, Haynes, Selden and Lodge Expressway, Bid Area 2, Proj. Mich. 1-7, DETROIT, MICH. Detroit Housing Comn., Harry J. Durbin, secy., 409 Griswold St., Detroit, Mich. Bids Dec. 17. CD 11/28.

▲ **Francis J. Corr, Inc.**, 1120 Sheridan St., Lansing Mich. CA $1,126,940. brick, steel HOSPITAL State Home & Training School, LAPEER, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing Mich. CD 11/28, under LB.

H. M. Sheldon Co., 300 Penobscot Bldg., Detroit, Mich Owner Builds. $700,000. 62 brick single ranch HOUSES, O'Conner Ave., Mack Ave. and Nine Mile Rd., ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

Minn., Ada—SCHOOL—B.A. 1/21—Bd. Educ., G. Landsverk, clk., 2 story, bsmnt., 171x260 ft. school, $750,000. Plans deposit $15. Pass & Rockey, Mankato, archts. CD 3/5/52.

Minn., Goodhue—SCHOOL—B.A. 1/21—Bd. Educ., A. F. Eppen, clk., school, $600,000, Extended date. Haarstick, Lundgren & Assoc., W. 1385 First National Bank Bldg., St. Paul, archts. CD 12/17.

▲ **Ark., Jones Mill**—PLANT—Bids Asked—General Motors Corp., General Motors Bldg., Detroit, Mich., 114,000 sq. ft. fabrication plant, $3,194,324. J. Gordon Turnbull, 2630 Chester St., Cleveland, O., engr. CD 6/4/51.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Odessa**—OFFICE—Ben Nedow, c/o Radio Station, KECK, Odessa, soon lets contract, 10 story bsmnt., 50x140 ft., 77,000 sq. ft., concrete, steel, brick, stone office. $1,000,000. Wyatt C. Hedrick, Fort Worth Natl. Bank Bldg., Fort Worth, engr.-archt. CD 12/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

Brown & Leguil, Mankato, Minn. CA. $557,845. grading 12.3 mi. between 1 mi. est of Albany and St. Joseph. Stearns Co., CD 12/17, under LB.;

Barton Contg. Co., 3115 Hennepin Ave., Minneapolis, Minn. CA. $204,652. grav. base, plant-mixed bit. surf. 11.5 mi. between Rockford and Hamel, Hennepin Co.;

J. S. Pukrop, Ivanhoe, Minn. CA. $103,619. grading 6.9 mi. between Hills and Jct. TH 75, Rock Co.;

Kimmes Constr. Co., Hastings, Minn. CA. $385,641. grading 10.4 mi. between Mora and Jct. TH 107, Kanabec Co. Grand total $1,251,757. Bids Dec. 5. CD 11/19.

▲ **NEBRASKA**—State Dpt. Roads & Irrigation, Lincoln,

Peter Kiewit Sons Co., Omaha Natl. Bank Bldg., Omaha, Neb., LB. $1,238,326, concrete paving and culverts for center section of Northwest Radial Drive, FA-U-112, in Omaha, Douglas Co. Bids Dec. 16. CD 11/26.

▲ **Pure Oil Co.**, 35 E. Wacker Dr., Chicago, Ill. Owner Builds. $1,000,000. 43 mi. crude oil pipe line with oil gathering laterals, Kimball and Cheyenne Counties, NEBRASKA.

† **Massman Constr. Co.**, 20 W. 9 St., Kansas City, Mo. LB, $533,393, est. $603,534. restore flood protection structural and facility Argentine Unit Part II, Sect. II right bank of Kaw River, Kansas City Flood Control Proj., CIVENG 23-028-53-100, KANSAS. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Dec. 16. CD 12/9.

▲ **List & Clark Co.**, Railway Exchange Bldg., Kansas City, Mo., LB, $1,478,000, est. $1,400,000. floodway on N. Canadian River from 23 St. to Spencer, OKLAHOMA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Dec. 18.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver,

C. L. Hubner Co., 4200 E. Jewell Ave., Denver, Colo., CA. $649,617, Combined Colo. Proj. No. UI 002-2 (23) Unit 2, UI 002-2 (8), Section 2, second contract and UI 002-2 (17) Unit 3 grading, structures, plant mix oil processed surf. 1.415 mi., Denver Co. Bids Dec. 9, awarded Dec. 12. CD 12/16, under LB.

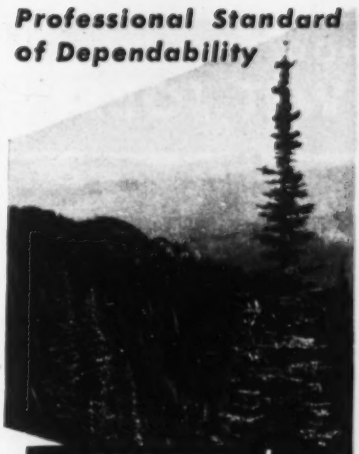
† **Eiseman, Seabrook & Elliott**, Chula Vista, Calif. LB. $694,184. completing Canyon Ferry Dam, power house Canyon Ferry unit, Missouri River Basin, Proj. DC 3752, MONTANA. Bureau Reclamation, Dpt. Interior, Canyon Ferry, Mont. Bids Dec. 18. CD 10/22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Builders Constr. Co.**, Braniff Bldg., Oklahoma City 2, Okla., CA. $1,013,800. U. S. Grant Junior HIGH

Professional Standard of Dependability



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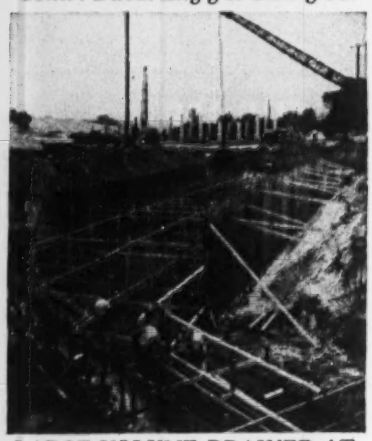
HOW TO HANDLE
WET JOBS

#13 of a Series

RELOCATION OF
HOGAN'S CREEK
Jacksonville, Florida
Contr: Duval Eng'g & Cont'g Co.



LARGE VOLUME DRAINED AT
VERY LOW FUEL COST

EXCAVATION ON this job was 15 ft deep (see photo) and ground water had to be lowered 10 ft in difficult soil (very fine sand with clay lenses.) How would you have estimated fuel requirements, figuring approximately 400 ft of header-line perimeter?

• Actually, one diesel-powered Griffin pump, working continuously 'round-the-clock, consumed only 35 gal of fuel each 24 hrs, even though on jobs of comparable scope, the average diesel pump will usually eat up anywhere from 40% to 80% more than this quantity. Thus the every-day savings to the contractor were appreciable.

• Another interesting feature was the use by Griffin engineers of a new type slip-on swing joint (see photo) to speed installation of the wellpoints. Any wonder contractor termed the job "100% success!"

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

SCHOOL, S.W. 50 and Penn Sts., OKLAHOMA CITY, OKLA. Bd. Educ., 400 N. Walnut St., Oklahoma City, Okla. Bids Dec. 18, awarded Dec. 19. CD 11/12.

▲ **Hub Hill & Assoc.**, Mercantile Securities Bldg., Dallas, Tex., CA. Approx. $3,500,000. construct, manage, finance, 340 unit HOUSING, near Bel Mead Addn., FORT SAM HOUSTON, TEX. Federal Housing Admin., 610 S. Flores St., San Antonio, Tex. CD 11/19.

▲ **H. J. Von Rosenberg Co.**, 330 Melrose Pl., San Antonio, Tex., CA. $2,685,000. Contr. 1, general mercantile department STORE; CA. $155,245, general STORAGE and SHOP for vehicles Contr. 9, off Pleasanton Rd., SAN ANTONIO, TEX. Sears, Roebuck & Co., Romana Plaza, San Antonio, Tex. Bids Dec. 9. CD 11/26.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., Los Angeles**—HOUSING—B.A. 1/16—Housing Auth. of City of Los Angeles, 1401 E. First St., Aliso Village extension low-rent housing, Project CA1 4-14, $1,000,000. Plans deposit $100. CD 9/18/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Sound Constr. & Eng. Co.**, 1300 Aloha St., Seattle, Wash., CA, $2,612,513, 8 Barracks, mess hall and cold storage bldg., at Ault Field, Spec. 35603, WHIDBEY ISLAND, WASH. P. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids Nov. 26 CD 12/2, under LB.

▲ **CALIFORNIA**—Division of San Francisco Bay Toll Crossings, c/o Dpt. P. Wks., 2054 University Ave., Berkeley, Zone 4,

Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif. and **A. Soda & Co.**, Emeryville and **Judson Pacific-Murphy Corp.**, Emeryville, Calif., LB $21,099,319, superstructure;

Peter Kiewit Sons Co. & Ben C. Gerwick, Inc., 112 Market St., San Francisco, Calif., LB, $14,234,550, substructure for 4 mi., San Rafael-Richmond Bridge over north arm San Francisco Bay between Richmond and San Rafael, Marin and Contra Costa Counties. Bids Dec. 19. CD 11/14.

† **Haddock Engineers Ltd.**, 1616 Greenwood Ave., Montebello Calif., LB, $870,000. facilities for aircraft ranges China Lake, NOY 76457, Spec. 37197, INYOKERN, CALIF. Dpt. Navy, Naval Ordnance Test Station, Inyokern, Calif. Bids Dec. 16. CD 11/19.

▲ **Ukropina, Polich, Kral & Steve P. Rados**, 201 Las Tunas Dr., San Gabriel, Calif., CA, $3,705,484, middle feeder of Colorado Aqueduct distr. system Garvey Reservoir to Southern Ave., Montrey Park and South Gate, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 W. 3 St., Los Angeles, Calif. Bids Dec. 5. CD 12/21, under LB.

† **N. P. Van Valkenburg Co.**, 7699 San Vicente Blvd., South Gate, Calif., LB, $754,620, water supply system at Marine Corp Training Center, NOY 74110, Spec. 35145, TWENTYNINE PALMS, CALIF. Dpt. Navy, San Diego, Calif. Bids Dec. 18. CD 12/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ray-Hahn-Neece**, Norman Bldg., San Diego, Calif., LB, $2,749,000 construct, manage and finance Navy HOUSING, Project N-21, BARSTOW, CALIF. P. Wks. Officer, Eleventh Naval Dist., San Diego, Calif. Bids Dec. 16. CD 11/19.

▲ **Ford J. Twaits Co.**, 449 S. Beaudry St., Los Angeles, Calif., and **Morrison-Knudsen Co.**, 411 W. 5 St., Los Angeles, Calif., CA, $6,142,548, 8 story POLICE FACILITIES BLDG., LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Dec. 10, awarded Dec. 12. CD 12/12, under LB.

▲ **Barrington & Botke**, 333 Riverside Dr., Santa Paula, Calif., CA, $1,492,590, Anacapa Junior High SCHOOL, Telegraph and Mill Rds., VENTURA, CALIF. Ventura High School District, 295 S. Arcade St., Ventura, Calif. Bids Dec. 8, awarded Dec. 11. CD 12/15, under LB.

Kemp Bros., 8750 Mettler St., Los Angeles, Calif., CA, $628,200, GYMNASIUM and INDUSTRIAL ARTS BLDG., WHITTIER, CALIF. Whittier Union High School Dist., 610 W. Phila. St., Whittier, Calif. Bids Dec. 1, awarded Dec. 18. CD 12/9, under LB.

P. J. Walker Co., 3900 Whiteside St., Los Angeles, Calif., CA, $680,000, TELEPHONE EXCHANGE, 3580 Orange St., RIVERSIDE, CALIF. Pacific Telephone & Telegraph Co., 740 S. Olive St., Los Angeles, Calif. CD 9/3.

▲ **Tavares Constr. Co. & L. C. Burgener**, 1150 Silverado, San Diego, Calif., CA, $1,130,000. 144 frame, stucco DWELLINGS in Clairmont Tract 9 and 10, SAN DIEGO, CALIF. Tabur Apartments, 1150 Silverado, San Diego, Calif.

▲ **Trepte Constr. Co. & Guy F. Atkinson**, 2001 Kettner Blvd., San Diego, Calif., LB, $3,267,000, 9 story, Donald H. Sharp Memorial Community HOSPITAL, SAN DIEGO, CALIF. San Diego Hospital Assn., San Diego Trust and Bank Bldg., San Diego, Calif. Bids Dec. 12. CD 11/12.

† **Ford J. Twaits Co., Morrisson-Knudsen Co., Macco Corp.**, 449 S. Beaudry St., Los Angeles, Calif., LB, $648,870 addnl. buildings (second increment) Marine Corp Training Center, NOY 74046, Spec. 35111, TWENTYNINE PALMS, CALIF. Dpt. Navy, San Diego, Calif. Bids Dec. 11. CD 11/25.

Lanark Park Builders, 8840 W. Olympic Blvd., Beverly Hills, Calif., CA, $764,400, 79 stucco DWELLINGS, Cedros, Natick and Willis Aves., VAN NUYS, CALIF. Syndicate Mortgage Co., 3842 Wilshire Blvd., Los Angeles, Calif.

T. A. Stanfield, 986 E. Base Line, San Bernardino, Calif., CA, $862,963, 1 story, rein.-con. HIGH SCHOOL, VICTORVILLE, CALIF. Victor Valley High School Dist., Victorville, Calif. Bids Nov. 12, awarded Dec. 12. CD 11/21, under LB.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **BRITISH COLUMBIA**—Province of B. C., Victoria, Dawson, Wade & Co. Ltd., 7 Clark Dr. Vancouver, B. C., CA, $1,745,403, reconstr. 9 mi. roadway, Golden to Yoho Park, Bids Sept. 22. CD 10/29, under LB.

▲ **Missouri Valley Canadian Ltd.**, Winnipeg, Man., c/o owner, CA, $1,000,000. three 2½ mi. crude oil pipe lines from Burnaby to Shelburn, BRITISH COLUMBIA. Canadian Bechtel Ltd., Barnet, B. C.

Grant Contg. Co. Ltd., 26 Queen St. E., Toronto, Ont., LB, $681,800, 48 in. water main from Parkdale Pumping Station to Indian Road Crescent and Humberside Ave., TORONTO, ONT. City, A. A. Lamport, mayor, City Hall, Toronto, Ont. Bids Dec. 16. CD 11/17.

E. M. Cleve Constr. Co. Ltd., Lloydminster, Sask., CA, $500,000, oil pipe line and small building, Lloydminster, SASKATCHEWAN, Husky Oil & Refining Co. Ltd., Regina, Sask.

BUILDINGS

LOW BIDS AND CONTRACTS

E. H. Shockley & Son, Ltd., 1936 Powell Ave., Vancouver, B. C., LB, $609,000, Coqualeetza Indian HOSPITAL alterations, and new wing, SARDIS, B. C. Dpt., P. Wks., Hunter Bldg., Ottawa, Ont. Bids Dec. 17. CD 11/26.

Twin Cities Development Ltd., 865 Tache Ave., Winnipeg, Man., Own Forces, $500,000, HOUSING DEVELOPMENT, on 3-acres, ST. VITAL, MAN.

▲ **Pigott Constr. Co. Ltd.**, 1250 Bay St., Toronto, Ont., CA, Approx. $4,000,000, 9 story OFFICE, 2 penthouse floors, steel, stone, Bloor St. E. at Church St., TORONTO, ONT. Crown Life Insurance Co., Yonge and Colborne Sts., Toronto, Ont. Bids Dec. 9, awarded Dec. 16. CD 11/17.

ALASKA

BIDS ASKED—BUILDINGS

† **Alaska, Fort Richardson**—ADMINISTRATION—B.A. 1/22—U. S. Eng., Anchorage, 3 story part bsmnt., 45,000 sq. ft. concrete, masonry admin. bldg., Inv. 53-35. $874,000. Plans deposit $25. CD 11/25.

BUILDINGS

LOW BIDS AND CONTRACTS

Valley Presbyterian Hospital, Palmer, Alaska, rejected bids July 17, concrete, steel HOSPITAL, PALMER, ALASKA. LB $643,308, CD 7/22, under LB.

Proposed Projects

WATER SUPPLY

▲ **Ala., Bessemer**—City, City Hall, WW Imprvs. $1,250,000. J. W. Goodwin Eng. Co., 2111 7 Aves., Birmingham, consult. engr. CD 5/16/47.

▲ **La., Jennings**—City, City Hall, $1,250,000 bond election Jan. 22, water and sewer imprvs. CD 3/24/50, under Water Supply and Sewers, Waste Disposal.

▲ **N. C., Charlotte**—City, City Hall, voted bonds, WW imprvs. $2,000,000. CD 8/3/50.

▲ **N. C., Greensboro**—City, City Hall. voted bonds Dec. 16, WW imprvs. $1,400,000. CD 11/14.

▲ **O., Jackson**—City, WW program, clearing reservoir site, constr. temporary wells, earth-filled dam, pipe lines, raw water pumping station, filter plant, high-lift pumping station. $1,300,000. Jones, Henry & Williams, Security Bldg., Toledo, engrs. CD 11/14/51.

▲ **O., Sandusky**—City, City Hall, water pumping facilities and water treatment plant addns., imprvs. $1,000,000. Jones, Henry & Williams, Security Bldg., Toledo, consult. engrs.

O., Sandusky—Erie Co. Comrs., Court House, Sandusky, imprv., exten. water service from Sandusky to Margaretta, Perkins and Huron Twps., incl. pumping stations, elevated storage tanks, distr. mains, related facilities. $800,000. Jones, Henry & Williams, Security Bldg., Toledo, consult. engrs. CD 6/16/47.

Va., Martinsville—City, City Hall, bond election Feb. 3, WW imprvs. $810,000. CD 2/18/47.

Alta., Red Deer—City, filter and pumping facilities extension on South Hill and new water mains, $670,000. Haddin, Davis & Brown Ltd., 513 8 Ave. W., consult. engr. CD 7/7/50.

SEWERS, WASTE DISPOSAL

Calif., Oxnard—City, City Hall, sewage treatment plant and interceptor lines at Ormond Beach. $950,000. Currie Eng. Co., Andreson Bldg., San Bernardino, consult. engr.

▲ **N. C., Charlotte**—City, City Hall, voted bonds, sanitary sewer imprvs. $5,000,000. CD 8/3/50.

▲ **O., Columbus**—City, City Hall, expansion sewage treatment plant to increase capacity from 65 m.g. to more than 80 m.g. per day. $4,000,000. CD 11/19/45.

O., Dayton—City, City Hall, Ridge Ave. sanitary sewers. $591,630. John Hale, city engr. CD 10/23/45.

Okla., Ardmore—City, voted bonds Dec. 16, sanitary sewer extens. $528,593. W. R. Holway, 302 E. 18 St., Tulsa, consult. engr. CD 12/10.

▲ R. I., Providence—Blackstone Valley Sewer Dist. Comn., 238 State St., sewers $7,500,000. CD 11/17/50.

STREETS AND ROADS

▲ MICHIGAN—State Hy. Comn., 222 Townsend St., Lansing, Zone 13,

Kent Co.—North-South Expressway, Franklin St. southwest and over Grand River, city limits at Alger and north to point across river, $17,000,000; to US 131 from US 131 to Alger St., $3,000,000.

▲ Miss., Vicksburg—Bd. Supervs. Warren Co., voted $1,500,000 bonds, imprv. 50 mi. county roads.

▲ Neb., Bellevue—City, John Johnson, street comr., long range street paving project. $1,500,000. Kirkham, Michael & Assoc., 1504 Dodge St., Omaha, consult. engrs. CD 12/9.

▲ N. C., Charlotte—City, City Hall, voted bonds, street imprvs. $1,000,000. CD 8/3/50.

EARTHWORK, WATERWAYS

▲ California—United Water Conservation Distr., 806 Railroad Ave., Santa Paula, defeated $18,500,000 bonds, 2 dams and conduit sys., to carry water to Oxnard Plains and Pleasant Valley areas, Oxnard and Port Hueneme, Ventura Co. CD 11/21.

AIRPORTS

▲† Kan., Wichita—HOSPITAL and DENTAL FACILITIES—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., hospital and dental facilities, Wichita Air Force Base. $1,703,000. CD 2/2/51.

▲† Tex., Mission—AIR BASE DEVELOPMENT—U. S. Eng., 606 Santa Fe Bldg., Galveston, water sys. $75,000; sanitary sewerage sys. extens. and rehabilitation, $75,000; storm sewers, open drainage, $70,000; general earthwork and dirt, $68,500; road and street imprvs., $75,000; outside area lighting, $60,000; repair shops, storage, $500,000; parking apron, $400,000; taxiways, $250,000; airfield lighting, $150,000; fueling sys., service station, $125,000; Runway No. 1, $750,000; Runway No. 2, $1,000,000; at Mission Air Field. Mitchell & Hunt, 510 Transit Tower, San Antonio, consult. engrs.-archts. CD 12/1.

LATIN AMERICA

Mexico, Mexico City—City Govt., Palacio Municipal, Mexico City, plans public market. $700,000.

▲ Mexico, Mexico City—Perlofil Mexicana, c/o Sociedad Mexicana de Credito Industrial, V. Carranza, 946, Mexico City, plans Perlon factory. $2,000,000.

Mexico, Puebla—City Govt., Palacio Municipal, Puebla, plans public market. $600,000.

PUBLIC BUILDINGS

▲ Calif., Los Angeles—SCHOOL—Los Angeles Bd. Educ., 1425 S. San Pedro St., plans by Stiles O. Clements, 310 W. 7 St., Brentwood-Palisades Junior High School. $1,800,000. CD 6/13.

Calif., Ontario—SCHOOLS—Ontario City School Dist., Ontario, $750,000 bond election Jan. 30, schools. CD 4/8/49.

Colo., Pueblo—SCHOOLS—School District No. 70, Pueblo, defeated bonds 5 new schools, existing school alterations and addns., $950,000. Alfred Watts Grant, Flatiron Bldg., Denver, consult. engr. and archt. CD 11/18.

▲ Conn., New Haven—PARKING GARAGE—New Haven Parking Auth., City Hall, 4 story, 176x200 ft., rein.-con. parking garage, College and Crown Sts., $1,000,000.

Fla., Crestview—HOSPITAL—Okaloosa Co., Court House plant by Chas. H. McCauley, Jackson Bldg., Birmingham, hospital, $800,000.

Ga., Newnan—SCHOOL IMPRVS.—City, City Hall, voted bonds, school imprvs. $750,000.

Ga., Savannah—COURT HOUSE—Chatham Co., Court House, voted bonds, court house addns., alterations. $500,000. CD 11/14.

▲ Ill., Alton—SCHOOL—Alton Community School Dist., 151, Bd. Educ., plans by Albert M. Goedde, 1452 State St., East St. Louis, East Junior High School, Godfrey Junior High Bldg., Horace Mann, Roosevelt and Irving Schools, two schools, Godfrey, McKinley, Clara Barton, and West Junior High school addns., school stadium. $4,820,000. CD 6/20/46.

Me., Orono—DORMITORY—State, University of Maine, A. A. Hauck, pres., Orono, men's dormitory. $800,000.

▲ Mass., Cambridge—SCHOOL—City, School Dpt., J. M. Tobin, supt., 1700 Cambridge St., Ellis Wyman Elementary School, $1,190,000; memorial bldg. and gymnasium for Cambridge High and Latin Schools, $1,153,200. CD 12/4/51.

▲ Mass., Cambridge—MEMORIAL—City, City Hall, plans by Richard Shaw, 25 Huntington Ave., Boston, war memorial bldg., Cambridge High and Latin Schools, $1,153,000. CD 12/22.

▲ Mass., Halifax—SCHOOL—Towns Halifax, Kingston, Plymouth and Pembroke, Regional School Comn., H. O. Weston, chn., Chester Ray, supt. Schools, 150 Main St., Kingston, Silver Lake Regional High School, Silver Lake Dist. $1,500,000.

▲ Mass., Northampton—SCHOOL—City, W. R. Barry, supt. Schools, Dr. Carroll Johnson, chn. Volunteer Citizens Comn., City Hall, Senior High School, Triangle St., $1,000,000.

▲ Mass., Swampscott—HOUSING—Swampscott Housing Auth., J. A. Hegarty, chn., Town Hall, housing, $1,000,000.

Mass., Walpole—HOUSING—Walpole Housing Auth., 144 Washington St., 20 housing units. $500,000.

Mich., Pontiac—COUNTY—Oakland Co., H. Lloyd, Clawson, chn. Special Com., Pontiac, brick, stone, steel, concrete county bldg. $950,000.

▲ Minn., Blue Earth—SCHOOL—Bd. Educ., M. Yvonne, Russ, clk., voted $1,250,000 bonds Dec. 18, high school, Haarstick, Lundgren & Assoc., W. 1835 First National Bank Bldg., St. Paul, archts.

Minn., Hibbing—COURT HOUSE—St. Louis County, W. H. Borgen, aud., Duluth, court house, $500,000.

▲ Mo., North Kansas City—SCHOOLS—Bd. Educ., H. W. Schooling, supt., $1,250,000 bond election Feb. 5, schools.

▲ Neb., Lincoln—HIGH SCHOOL—Bd. Educ., 720 S. 22 St., plans by Davis & Wilson, 225 Stuart Bldg., Southeast Junior High School. $1,750,000. CD 5/7/51.

▲ N. J., Trenton—OFFICE—State Building Auth., State House, state office bldg., W. State St., adjoining present State House Annex, $11,000,000. CD 8/3/45.

▲ N. J., Trenton—ADMINISTRATION—State Building Auth., State House, administration bldg. for State Dpt. of Education, on campus of State Teachers College, Hillwood Lakes, Ewing Twp., $1,500,000.

N. C., Charlotte—LIBRARY—Mecklenberg Co., Court House, voted bonds Dec. 5, library. $800,000. CD 10/13.

▲ N. C., Charlotte—SCHOOL, etc.—Mecklenberg Co., Court House, voted bonds Dec. 5, school imprvs. $7,500,000. CD 10/13.

▲ N. C., Greensboro—AUDITORIUM—City, City Hall, defeated bonds Dec. 16, war memorial auditorium, $1,150,000. CD 11/14.

▲ O., Cleveland—HIGH SCHOOL—Bd. Educ., 1380 E. 6 St., Zone 14, plans by Arthur F. Baer, c/o owner, Junior High School, rear of present George Washington Elementary School, 16210 Lorain Ave. $1,000,000. CD 11/14/50.

▲ O., Dayton—SAFETY—City, Municipal Bldg., plans by Schenck & Williams, 3rd Natl. Bldg., Lorenz & Williams, 223 W. 1 St., Freeman A. Pretzinger, Reibold Bldg., 4 story, 88,000 sq. ft. brick with stone trim safety bldg., fronting W. Third St., west of Perry St. $1,500,000. CD 1/20/50.

Okla., Ponca City—HIGH SCHOOL—Bd. Educ., Ponca City, voted bonds, Senior High School. $600,000. W. R. Brown, Ponca City, archt. CD 10/22.

▲ Ore., Lakeview—HOSPITAL—State Bd. Control, Capitol, Salem, voted bonds, state mental hospital for aged. $3,000,000.

▲ Pa., Nanticoke—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, complete remodeling of existing bldg. and adding 3 story wing to Nanticoke State Hospital. $1,000,000. A. F. Jones, c/o owner, ch. engr. CD 3/14/51.

▲ Pa., New Paris—HIGH SCHOOL—Chestnut Ridge Joint School Dist., New Paris, plans by J. H. Kring & J. P. Ross, 1534 Luzerne St., Westmont, Johnstown, Junior Senior High School, near Fishertown, $1,000,000.

▲ Pa., Pittsburgh—GARAGES—Pittsburgh Public Parking Auth., 200 Ross St., plans by Hoffman & Crumpton, Century Bldg., 5 story, open deck, 490 car parking garage, Blvd. of Allies, 3 and Smithfield St., $1,750,000; 4 story, open deck, 404-car parking garage, Penn Ave., 8 to 9 Sts. and Duquesne Way, $1,750,000.

▲ R. I., Bristol—VETERANS HOME—State, State House, Providence, brick, steel, concrete Veterans Home, $1,500,000.

▲ Tenn., Chattanooga—CIVIC CENTER—City, City Hall, and Hamilton Co., Court House, plans by Bianculli & Palm, 501 Cherry St., civic center. Approx. $1,000,000. CD 11/18.

Tenn., Sevierville—MILL—City, City Hall, voted bonds Dec. 11, mill addn. $600,000. CD 11/21.

▲ Tenn., Shelbyville—PLANT—City, City Hall, voted bonds Dec. 11, mfg. plant. $1,000,000. CD 11/28.

▲ Tex., Amarillo—SCHOOLS—Amarillo Independent School Dist., Amarillo, voted bonds Dec. 13, Elementary Schools No. 1, $450,000; No. 2, $375,000; No. 3, $550,000; No. 4, $300,000; No. 5, $500,000; high school remodeling and addn., $750,000; Junior High School, $2,000,000; heating plant, $250,000; gymnasium, $350,000; new (elementary) classrooms, $700,000; misc. classrooms, $450,000; playgrounds, $150,000. CD 11/26.

▲ Va., Danville—HOUSING—Danville Housing Auth., City Hall, 250 Negro Housing units. $2,000,000. CD 10/25/49.

▲ Va., Elko—HOSPITAL—Comm. of Va., State Hospital Bd., 309 N. 12 St., Richmond, plans by Merrill C. Lee, 603 E. Franklin St., Richmond, mental hospital and utilities. $18,000,000. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs.

▲ Va., Petersburg—HOSPITAL—Comm. of Va., State Hospital Bd., 309 N. 12 St., Richmond, plans by Baskervill & Son, 2313 W. Cary St., Richmond, infirmary, $1,000,000; tuberculosis treatment bldg., $1,250,000; power plant, $800,000, Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs., all foregoing at Central State Hospital.

Va., Richmond—SCHOOLS—Henrico County School Bd., 22 and Main Sts., plans by Dixon & Norman, 1103 E. Main St., Negro Elementary School in Tuckahoe Dist.; elementary school at Crestview, $520,000. CD 11/28.

▲ Wash., Vancouver—SCHOOL—School District 13, Vancouver, plans by Stewart & Richardson, Central Bldg., Seattle, high school, $2,500,000. CD 9/18.

W. Va., Romney—ADMINISTRATION DORMITORY—W. Va. State Bd. Educ., State Office Bldg., Charleston, rebuild administration dormitory at State School for Blind. $600,000. CD 2/8/46.

▲ B. C., Victoria—EXHIBITION—City, City Hall, plans by Sharp & Thompson, Berwick & Pratt, 1535 Robson St., Vancouver, 3 story, with 1 story wings rein.-con. exhibition bldg., for general mfg. and electrical exhibits, government displays, Indian museum, 400 seat lecture theatre, dining terrace, $1,000,000. CD 12/13/46.

N. B., Fredericton—CHEMISTRY—University of New Brunswick, Fredericton, plans by Marani & Morris, 1250 Bay St., Toronto, Ont., chemistry bldg. on campus. $600,000.

Que., Beauport—SCHOOL—School Comn., G. Mercier, secy., Beauport, plans by L. Turcott, 37 de la Couronne St., Quebec City, 3 story, concrete, brick, school extension, $600,000.

COMMERCIAL BUILDINGS

▲ Calif., Los Angeles—DWELLINGS—Vermont Knolls, Inc., 8617 4 Ave., Inglewood, 156 frame, dwellings, East Rd. between Vermont and Normandie Aves. $1,250,000.

Calif., Mojave—DWELLINGS—The Contracting Engineers, 2310½ W. Vernon St., Los Angeles, plans by Absmeir & O'Leary, 1898 Crenshaw Blvd., Los Angeles, 30 single and 35 double dwellings, $500,000.

Calif., North Hollywood—HOUSES—Wilson-Kleefeld Builder, 373 S. Robertson St., Beverly Hills, 85 frame, stucco houses Van Owen and other streets. $700,000.

▲ Calif., Palmdale—HOMES—Modern Homes, Inc., 4922 Lankershin Blvd., Los Angeles, plans by John J. Kewell, 1344 Wilshire Blvd., Los Angeles, 200 frame homes, on Main St. $1,000,000.

▲ D. C., Wash.—OFFICE—National Education Assoc., 1201 16 St. N.W., plans by Joseph Saunders, 121 S. Columbus St., Alexandria, Va., 8 story office. $5,000,000.

▲ Ill., Chicago—BANK, etc.—Federal Reserve Bank of Chicago, 230 S. La Salle St., Zone 4, plans by Naess & Murphy, 80 E. Jackson St., Zone 4, bank and office bldg. top addn., $3,000,000.

Ind., Muncie—STORE—Ball Stores, Inc., Mrs. Margaret Petty, pres., Charles and Walnut Sts., plans by Hamilton & Graham, Muncie, remodeling 5 story, department store, $500,000 or more. Swen M. Swensson & Assocs., 53 W. Jackson Blvd., Chicago, Ill., consult. engrs.

▲ Ia., Ottumwa—TELEPHONE EXCHANGE—Northwestern Bell Telephone Co., Ottumwa, telephone exchange, 4 and Washington Sts., $2,000,000.

Kan., Great Bend—NURSES HOME, etc.—St. Rose Hospital, Great Bend, plans by Ray R. Gauger, 1950 Highland Parkway, St. Paul 5, Minn., nurses home and school. $600,000.

▲ Ky., Camp Breckinridge—HOUSING—Public Housing Admin., Housing & Home Finance Agency, 900 N. Lombardy St., Richmond, Va., plans by Fred Hartstein, McDowell Bldg., Louisville, 410 addnl. housing units, $2,000,000. E. R. Ronald & Assoc., 554 S. Third St., Louisville, consult. engrs. CD 10/17/52.

▲ Ky., Louisville—APARTMENT—Southern Baptist Theological Seminary, 2825 Lexington St., student apartment. $1,000,000. CD 12/16.

▲ Mass., North Attleboro—RESIDENCES—Arlington Constr. Co., Anthony Coletta, 15 Arlington St., Pawtucket, R. I., 115 residences, $1,250,000.

▲ N. Y., Mount Pleasant Twp.—HOSPITAL—Phelps Memorial Hospital, c/o Walter L. Johnson, 304 Spring St., Ossining, plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, and Rogers & Butler, 219 E. 44 St., New York, Zone 17, 183-bed hosoital, on 66-acre tract, on Albany Post Rd. $4,200,000.

▲ N. Y., New York—APARTMENT—607 Park Ave. Bldg. Corp., 16 Court St., Brooklyn, Zone 2, plans by Sylvan Blen, 565 Fifth Ave., Zone 17, 19 story apartment, 607 Park Ave., southeast corner of 65 St. $1,600,000.

Okla., Tulsa—OFFICE—Southwestern Bell Telephone Co., 405 N. Broadway, Oklahoma City, office, 5th and Detroit Sts. $500,000.

Tex., Abilene—APARTMENT—Hardin-Simmons University, Abilene, plans by F. C. Olds Co., 158½ Cypress St., 3 story 144-room and 2- apartments, mens' dormitory, brick, masonry type. $776,347. CD 6/8/50.

▲ Tex., Arlington—SHOPPING CENTER, etc.—Arlington Development Co., c/o Robert R. Holland, Jr., Gulf States Bldg., Dallas, 225,000 sq. ft. masonry, steel shopping center, $3,000,000; Unit 1, 30 frame, stucco dwellings, $325,000; Unit 2, 40 frame, cedar shake housing units, $355,000; Unit 3, 38 frame dwellings, $345,000; Unit 4, 35 cedar panel dwellings, $335,000; Unit 5, 25 frame, masonry trim dwellings, $300,000; Unit 6, 45 frame, brick trim dwellings, $400,000; Unit 7, 42 frame, stone trim dwellings, $375,000; Unit 8, 32 frame, masonry, stucco dwellings, $340,000; Unit 9, 36 frame, masonry brick, stone trim dwellings, $360,000, in 175-acre tract opposite General Motors Plant.

Tex., Nacogodches—HOTEL—Hotel Committee, c/o Jack McKinney, Nacogodches, plans by Edward Tucker, Box 946, 100-room hotel. $800,000. CD 8/27.

▲ **Va., Sweet Briar**—COLLEGE ADDNS., etc.—Sweet Briar College, Sweet Briar, addns., imprvs. to college. $2,500,000.

▲ **Wash., Seattle**—HOUSING—A. Balch, 8050 35 Ave. N.E. housing, 45 Ave. N.E. and E. 75 St. $2,000,000.

▲ **B. C., Burnaby**—MAIL ORDER CENTER, etc.—Robert Simpson Ltd., 176 Yonge St., Toronto, Ont., plans by Gardiner & Thornton, 1664 W. Broadway, Vancouver, concrete, steel, brick, stone mail order center and department store, $3,000,000. CD 5/9/51.

B. C., Burnaby—SUPERMARKETS—Safeway of Canada, Ltd., Burnaby, two supermarkets, one at north section at Hastings and Booser Sts. and other south section Edmonds and Kingsway. $500,000. Elmer Martin, chn. Industrial Bd.

▲ **B. C., Kitimat**—HOUSING—Aluminum Co. of Canada Ltd., Sun Life Bldg., Montreal, Que., plans by Semmens & Simpson, 1272 W. Pender St., Vancouver, and Sharp & Thompson, Berwick & Pratt, 1153 Robson St., Vancouver, 330 housing units for aluminum smelting center. $3,000,000. Mayer & Wittlesey, 31 Union Sq., New York, N. Y., consult. engrs.

▲ **N. B., St. John**—HOSPITAL—Sisters of Charity, St. John, plans by Gonan, Ferguson, Lindsay, Kaminker, Langley & Keenleyside, 515 Jarvis St., Toronto, Ont., St. Joseph Hospital addn. $1,300,000.

Ont., Toronto—CHURCH—Greek Orthodox Church of St. George, 115 Bond St., church. $600,000.

INDUSTRIAL BUILDINGS

▲ **La., Baton Rouge**—PLANT—Ethyl Corp., North Baton Rouge, plant addns. $2,700,000. CD 7/2/47.

N. C., Stanley—PLANT—Talon, Inc., Morton, Miss., plant, $500,000.

▲ **O., Dayton**—FACTORY—General Motors Corp., Moraine Products Div., 1420 Wisconsin St., 180,000 sq. ft. factory mfg. automotive parts, on 26-acre tract, east of present plant at 1420 Wisconsin Blvd. in Edgemont to house technical and engineering divisions, tunnel under New York Central R.R. tracks to connect new plant with present plant. $2,000,000.

▲ **O., East Cleveland**—FACTORY, etc.—Towmotor Corp., 1226 E. 152 St., Cleveland, plans by Austin Co., engrs.-archts., 15112 Euclid Ave., East Cleveland, 100,000 sq. ft. factory office and storage bldg., 16161 Euclid Ave. $1,500,000.

▲ **Okla., Ardmore**—COKING UNIT—Bell Oil & Gas Co., Natl. Bank of Tulsa Bldg., Tulsa, coking unit at Ben Franklin Refinery. $1,500,000.

▲ **Okla., Covington**—PLANT—Sterling Oil Co. of Oklahoma, Inc., Howard Bldg., Tulsa, gasoline extraction plant, near here. $2,750,000.

▲ **Okla., Edmond**—PLANT—Sterling Oil Co. of Oklahoma, Inc., Howard Bldg., Tulsa, gasoline extraction plant, near here. $2,500,000.

▲ **Pa., Brackenridge**—LABORATORY—Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh, 1, 2 and 3 story brick, stainless steel research laboratory, 4 to 6 bldgs. $3,000,000. CD 1/9/46.

Tex., Dallas—PLANT—Powers Mfg. Co., Cedar Springs Rd., plant expansion, mfg. heavy-duty chains and gears and electronic equip. $920,000.

▲ **Tex., Tyler**—PLANT—General Electric Corp., 11 Japhet St., Houston, appliance plant, on 100 acre tract. $7,000,000.

▲ **B. C., Burnaby**—PLANT—Dominion Glass Co. Ltd., 1111 Beaver Hall Hill, Montreal, Que., plant, $13,000,000.

▲ **Sask., Coleville**—REFINERY—Canada Southern Oil Co. Ltd., 329-A, Sixth Ave. W., Calgary, Alta., oil refinery to crack heavy crude-10,000 bbl. per day. $5,000,000. J. W. Buckley, c/o owner, secy.

UNCLASSIFIED

Mich., Lansing—TELEVISION RADIO CENTER—WJIM, Inc., Harold S. Gross., pres., 1501 Bank of Lansing Bldg., plans by Carson & Lundin, 50 Rockefeller Plaza, New York, N. Y., television-radio center incl. 1,000 ft. tower, 1,000 watt transmitter, 2 story, 130x130 ft. bldg., 22 ft. high. $750,000.

South Carolina—SUB-STATION and POWER LINES—South Carolina Public Service Auth., Moncks Corner, sub-station and electric power lines, Myrtle Beach, $500,000. CD 2/13/45.

▲ **Texas**—PIPE LINE—Fort Worth Basin Gas Co., c/o O. R. Smith, 3601 N. Sylvania St., Fort Worth, 16- to 24-in. natural gas pipe line carrier from Brownwood to Fort Worth, $9,000,000; natural gas field pipe line gathering sys., near Brownwood, $100,000; booster stations, near Fort Worth, $250,000; and near Brownwood, $200,000.

▲ **Texas**—PIPE LINE—The Texas Co., Port Arthur, petroleum products pipe line, Port Arthur area, Jefferson Co. $1,116,000.

▲ **Tex., Fort Worth**—STEEL RAILS—Chicago, Burlington & Quincy R.R. Co., (Fort Worth & Denver Ry. Co.) H. R. Clarke, ch. engr., 547 W. Jackson Blvd., Chicago 6, Ill., laying heavy steel rails on portions of Texas line, $1,250,000; open ditching and drainage work and some embankments, $450,000.

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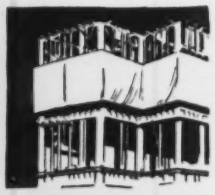

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **N. H., Portsmouth**—RUNWAYS, etc.—B.A. 1/23—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., runways, taxiways, aprons, aircraft fueling sys., Portsmouth Air Force Base, ENG 19-016-53-6. $5,000,000. CD 12/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Frouge Constr. Co., Inc.**, 74 Goodsell St., Bridgeport, Conn., CA, $1,653,000, Conn 2-D-1 temporary defence HOUSING, Fort Hill Home, GROTON, CONN. Public Housing Admin., 141 Milk St., Boston, Mass. Bids Dec. 3, awarded Dec. 17. CD 10/29.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 13, Maryland

STREETS AND ROADS

January 20, 23, 27 New Jersey January 29, New York

BIDS ASKED—BUILDINGS

▲ **Md., Silver Spring**—LABORATORY—B.A. 1/14—Johns Hopkins University, Physics Laboratory, 8621 Georgia Ave., Silver Spring, 1 story, brick, concrete block, rein.-con., steel laboratory, $1,700,000 Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, N. Y., archts. CD 8/1/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

George M. Brewster & Son, Inc., 275 W. Ft. Lee Rd., Bogota, N. J., CA, $1,883,483, grading, bridges for Palisades Interstate Parkway, Section 1-F, Alpine, Bergen Co. Bids Dec. 23. CD 12/4.

▲† **Yonkers Contg. Co., Inc.**, 69 Midland Ave., Yonkers, N. Y., CA, $3,533,359, clearing, rough grading, drainage McGuire Air Force Base, ENG 36-109-53-141, WRIGHTSTOWN, N. J. U. S. Eng., 121 N. Broad St., Phila., 1, Pa. Bids Nov. 25. CD 12/11, under LB.

▲ **Kaufman Constr. Co., Inc.**, 4000 Pulaski Ave., Phila. 40, Pa., LB $3,197,006. Contr. 260, Market Street Subway Extens., PHILA., PA. Procurement Dpt., City Hall Annex, Phila., Pa. Bids Dec. 2. CD 11/22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y. CA, $3,676,000, general constr.;

Edward B. Kearney Co., Inc., 145 E. 47 St., New York 17, N. Y., CA $625,156, heating for Mid-Brooklyn HIGH SCHOOL, Rutland Rd., Kinston Ave., Winthrop St., BROOKLYN, N. Y. Bd. Educ., Bureau Constr., 49 Flatbush Ave., exten., Brooklyn 1, N. Y. Bids Dec. 9. CD 12/15 under LB.

▲ **Brewster Manor Homes**, c/o Oscar I. Silverstone, archt., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. $4,000,000. 350 HOUSES on 70-acre tract, Hicksville Rd. MASSAPEQUA, N. Y.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., CA $1,734,000. JUNIOR HIGH SCHOOL 120, 161 St., from Trinity to Caldwell Aves., NEW YORK, N. Y. Bd. Educ., Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Dec 8 CD 12/16, under LB

▲ **East Hills Park Homes**, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $3,500,000 110 HOUSES, 20-acre tract, ROSLYN, N. Y.

▲ **Associated Terrace-at-Wantagh Homes**, c/o Oscar Silverstone, archt., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. $2,500,000. 258 HOUSES on 58 acre tract at Wantagh Ave. and Red Oak Dr., WANTAGH, N. Y.

▲† **Ajax Constr. Co., Inc. & Assoc.**, 925 15 St., N.W., Wash., D. C., CA. $5,696,700. LABORATORY bldgs., CAMP DETRICK, MD. U. S. Eng., First and Douglas Sts. N.W., Wash., D. C. Bids Nov. 25. CD 11/4.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 13 South Carolina January 21 Louisiana

STREETS AND ROADS

January 13 South Carolina

▲ **S. C., Spartanburg**—B.A. 1/16—City, water supply imprvs. $1,000,000. Plans deposit $25. Wiedeman & Singleton, P.O. Box 1878, Atlanta, Ga., engrs. CD 10/14.

BIDS ASKED—BUILDINGS

▲ **Ga., Atlanta**—HOUSING—B.A. 1/27—Atlanta Housing Auth., Trust Co. of Georgia Bldg., 1,000 housing units. $8,000,000. Extended date. CD 12/5.

▲† **Va., Fort Eustis**—LANDING SHIPS B.A. 1/27—U. S. Eng., foot of Front St., Norfolk, landing ships, warehouses and marine railway and repair shop, ENG 44-110-53-15. $5,014,000. Plans deposit $50. Mills, Petticord & Mills & Assoc., 3308 14th St. N.W. Wash., D. C., engrs-archts. CD 10/24.

▲ **Ga., Augusta**—HOSPITAL—B.A. 2/17—State Hospital Auth., State Capitol, Atlanta, Eugene Talmadge Memorial Hospital. $14,000,000. Plans deposit $100. Extended date. Gregson & Ellis, Mortgage Guarantee Bldg., Atlanta, archts. CD 5/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **A. G. Pinkston & Co.**, 1805 County St., Portsmouth, O., CA, $1,032,444, approx. 139,000 lin. ft. 8 in. vitr. clay sanitary sewers, appurtenances, PORTSMOUTH, VA. City, Municipal Bldg., Portsmouth, Va., Bids Dec. 10. CD 12/16, under LB.

▲† **McLean Contg. Co.**, 2405 Kimball Terrace, Norfolk, Va., LB $1,283,000. Alt. $1,235,000, Convoy Escort Pier, U. S. Naval Base, NOY 74889, Spec. 35800, NORFOLK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Dec. 23. CD 12/2.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comm., 1340 Wilson St., Charleston,

Bates & Rolgers Constr. Corp., 600 W. Jackson Blvd., Chicago, Ill., CA, $2,858,043, 2,665 ft. tunnel through divide between Cabin and Paint Creek Valleys Kanawha Co. Bids Dec. 18. CD 12/24, under LB.

▲ **H. C. Price Co.**, Bartlesville, Okla. CA Est. $3,500,000. 350 mi. natural gas loop lines, LOUISIANA, ALABAMA, GEORIGA, MISSISSIPPI AND SOUTH CAROLINA. Southern Natural Gas Co., c/o contractor.

▲ **FLORIDA**—State Hy. Dpt., Tallahassee,

Bunnell-Ludwig Corp., 15151 W. Dixie Hy., North Miami, Fla., CA, $1,075,005, Item 3, bridge Proj. 1714-175, Sarasota Co.;

Massman Constr. Co., 1221 Baltimore St., Kansas City, Mo., CA, $3,179,923, combination bid, Proj. Job. 1315-175 and 1304-175, Manatee Co. Bids Nov. 20. CD 12/2, under LB.

▲ **Boh Bros. Constr. Co.**, 2400 Cypress St., New Orleans, La. LB $1,483,517. Palmetto Street overpass, NEW ORLEANS, LA. City, Purchasing Div., City Hall, New Orleans, La. Bids Dec. 19. CD 11/24.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Daniel Constr. Co.**, 429 Main St., Greenville, S. C., CA, $2,000,000. MILL, SENECA, S. C. Abbott Worsted Co., c/o contractor.

▲ **Sullivan-Long & Hagerty**, 800 4 Ave. N., Birmingham, Ala., CA, $1,200,000, feed mfg. PLANT, BIRMINGHAM, ALA. Cosby-Hodges Milling Co., c/o Paul Berg, engr., 438 Utility Bldg., Fort Wayne, Ind. Bids Dec. 17. CD 12/2.

▲ **Strother-Barge Co.**, 189 Cain St. N. E., Atlanta, Ga., CA $1,036,264, HOUSING UNITS, GADSDEN, ALA. Gadsden Housing Auth., Gadsden, Ala. Bids Dec. 18. CD 12/23, under LB.

▲ **Winfrey Bros., Inc.**, 123 Burwell Ave. N.W., Knoxville, Tenn. CA $4,000,000. addnl. 19 floors to Martin Brown OFFICE (10 ft. high each story), increase footing from 52,000 to 192,000 sq. ft., rein.-steel, concrete, Fourth and Broadway, LOUISVILLE, KY. J. Graham Brown, Brown Bldg., Louisville, Ky. Preston J. Bradshaw, 1800 Olive St., St. Louis, Mo., engr.-archt.

▲ **O'Brien & Padgett**, P. O. Box 5067, Memphis, Tenn. CA, $1,641,491, HOUSING, Proj. Tenn. 7-4, JACKSON, TENN. Jackson Housing Auth., Jackson, Tenn. Bids Dec. 18. CD 12/23, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **OHIO**—BA. 1/14—Ohio Turnpike Comm., 361 E. Broad St., Columbus, Zone 15,

Summit Co.—superstructure for twin bridges over Cuyahoga River, total length 2,682 ft., c-c of bearings of abutments 13 spans (9 deck truss spans @ 250 ft. and 4 deck girder spans @ 100 ft.) Stations 256 plus 40.27 to 288 plus 30, Cont. C 15-A. CD 7/8/52, under Streets and Roads.

BIDS ASKED—BUILDINGS

▲ **Ill., North Chicago**—SCHOOL—B.A. 1/22—School Dist. 123, 1605 Sheridan St., 1½ and 2 story, brick community high school, $3,000,000. McFadzean Everly Assocs., 874 Green Bay Rd., Winnetka, landscape engrs. Warren S. Holmes, Olds Tower, Lansing, Mich., archt. CD 12/26/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Knowlton Constr. Co.**, 106 N. Main St., Bellefontaine, O., LB, $1,437,000, general constr.;

E. W. File Co., Lima, O., LB, $584,712, heating, plumbing, ventilating for Marion General HOSPITAL, MARION, O. City, City Hall, Marion, O. Bids Dec. 23. CD 11/17.

▲ **R & R Constr. Co.**, 735 Park Dr., Alton, Ill., LB, $1,479,000, Proj. Ill. 15-4, fifty-eight, 2 story buildings, 116 DWELLINGS UNITS, seventeen 1 story buildings, 34 DWELLING UNITS, and 1 story MANAGEMENT and MAINTENANCE BLDG., ALTON, ILL. Madison County Housing Auth., 3 and Haller Sts., East Alton, Ill. Bids Dec. 17. CD 11/21.

▲ **Lloyds Builders, Inc.**, 61 E. Superior St., Chicago, 11, Ill., LB, $1,463,812, 18 row HOUSES, 128 units, 95 and Wentworth Sts., CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago, 5, Ill. Bids Dec. 16. CD 12/1.

▲ **W. E. O'Neil Constr. Co.**, 2751 Clybourn Ave., Chicago, Ill., CA, $4,500,000, superstructure on jet engine TEST CELLS, aircraft engine div., 7401 S. Cicero St., CHICAGO, ILL. Ford Motor Co., 3000 Schaefer Rd., Dearborn, Mich. Bids Dec. 5, awarded Dec. 16. CD 11/28.

▲ **Geo. Sollitt Constr. Co.**, 109 N. Dearborn St., Chicago, 2, Ill., LB, $1,207,000, 1 and 2 story, face brick, community general HOSPITAL, LA GRANGE, ILL. Community Memorial General Hospital, 51 St. and Willow Spring Rd., La Grange, Ill. Bids Dec. 18. CD 12/1.

▲ **Carroll Constr. Co.**, 333 N. Michigan Ave., Chicago, 1, Ill., CA, $1,365,000, Libertyville Fremont HIGH SCHOOL, LIBERTYVILLE, ILL. School Dist. 120, Libertyville, Ill. Bids Nov. 19, awarded Dec. 15. CD 11/28, under LB.

▲ **Hagstrom Constr. Co.**, 1567 Selby Ave., St. Paul, Minn., LB, $2,798,000, 360 unit HOUSING, incl. 43 buildings, PEORIA, ILL. Peoria Housing Auth., 22 Warner Homes Court, Peoria, Ill. Bids Nov. 5.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 13 Iowa January 23 Missouri

STREETS AND ROADS

January 13 Iowa January 23 Missouri

BIDS ASKED—BUILDINGS

▲ **Mo., St. Louis**—SCHOOL—B.A. About 1/15—Bd. Educ., V. Harry Rhodes, comr. School Bldg., 911 Locust St., Zone 1, rein.-con., brick, steel, stone Technical High School, McRee and Hereford Aves. near Northrop Ave. $6,000,000, F. Ray Leimkuehler, c/o owner, archt. CD 4/8/52.

▲ **Ark., Jones Mill**—PLANT—B.A. 1/15—General Motors Corp., General Motors Bldg., Detroit, Mich., main section of fabricating plant, $3,000,000. Extended date. J. Gordon Turnbull, 2630 Chester St., Cleveland, O., engr. CD 12/24.

▲ **Tex., Corpus Christi**—AUDITORIUM—B.A. 1/20—Town, Town Hall, municipal auditorium, $1,400,000. Plans deposit $50. Extended date. Richard S. Colley, 310 S. Tancahua St., archt. Hare & Hare, 114 W. 10 St., Kansas City Mo., landscape archts. CD 12/1.

▲ **Mo., St. Louis**—HOSPITAL—B.A. 2/15—John Cardinal Glennon Hospital, c/o Archdiocese of St. Louis, Most Rev. Joseph E. Ritter, archbishop, 3910 Lindell Blvd., Zone 8, 6 story, bsmnt., brick, rein.-con., steel X-shaped main hospital, surgical wing, chapel and convent, 2 story connecting bldg. for outpatient clinics, 3 and 6 story nurses home, Grand and Park Aves. $5,500,000. Maguolo & Quick, 4908 Delmar Blvd., St., Louis, Zone 8, archts. and Neergaard, Agnew & Craig, 41 E. 42 St., New York, N.Y., consultants. CD 3/13/52.

▲ **Tex., Longview**—BANK and OFFICE—Bids Asked—First National Bank, Longview, (selected list bidders), 8 story, bank and office. $1,500,000. Alfred C. Finn, Bankers Mortgage Bldg., Houston, archt. CD 1/18/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **T. C. Bateson Constr. Co.**, Irwin-Keasler Bldg., Dallas, Tex., LB $3,111,534, with timber piling;

Olson Constr. Co., 410 S. 7 St., Lincoln, Neb., LB $3,062,198, with concrete footing, 2 maintenance hangars, Lincoln Air Force Base, Inv. 25-066-53-89, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Dec. 22. CD 12/17.

▲ † **Texas Bitulithic Co.**, Box 1807, Fort Worth, Tex., CA, $1,179,388, runways; $685,000, taxiway extens.; $519,685, warm-up aprons, Carswell Air Force Base Inv. ENG 41-443-53-31, FORT WORTH, TEX. Grand total $2,384,073. U. S. Eng., 100 W. Vickery St. Fort Worth, Tex. Bids Dec. 18. CD 12/10

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Menzo Hainline**, 8 E. 28 St., Hutchinson, Kan. Owner Builds. $1,250,000. 150 HOUSING units, HUTCHINSON, KAN.

▲ **Atlas Constr. Co.**, Box 1006, Texarkana, Tex., LB $2,417,088, HIGH SCHOOL, TEXARKANA, TEX. Texarkana School Dist., 10 and Pecan Sts., Texarkana, Tex. Bids Dec. 22. CD 12/12.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Calif., Los Angeles**—B.A. 1/21—Los Angeles Dept. Water & Power, 207 S. Broadway, 10,000 ft. 68 in. pipe Eagle Rock Hollywood Conduit, Unit 3, $1,000,000. Plans deposit $50. CD 12/21/51.

BIDS ASKED—BUILDINGS

▲ †**Idaho, Arco**—ASSEMBLY, etc.—B.A. 1/30—Idaho Operation Office, Atomic Energy Comn., 550 2 St., Idaho Falls, assembly and maintenance area and administration area for prototype aircraft propulsion reactor ground testing facilities at National Reactor Testing Station. $6,000,000. Extended date. CD 11/10.

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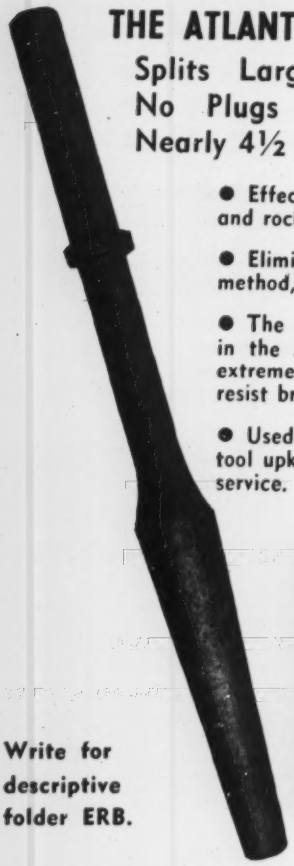

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Nearly 4½ times faster

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HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Peter Kiewit Sons' Co.**, 345 Kleways Ave., Arcadia, Calif., CA, $1,682,673, earthwork, concrete lateral lining, structures for Unit 3 of Mohawk Distribution System, Gila Proj., Spec. DC 3836, ARIZONA. Bureau Reclamation, Dpt. Interior, Yuma, Ariz. Bids Dec. 10, awarded Dec. 17. CD 12/18, under LB.

▲ **WASHINGTON**—Washington Toll Bridge Auth., Olympia,

Manson Constr. & Eng. Co., 821 Alaskan Way, Seattle, Wash., LB, $1,051,476, est. $1,000,000, bridge over Hale's Passage to Fox Island, Pierce Co. Bids Dec. 23. CD 12/1.

▲† **J. A. Terteling & Sons**, 4011 Fairview Ave., Boise, Idaho, LB, $1,613,279, est. $2,038,791 earthwork, concrete canal lining and structures for Chandler Canal, Station 128 plus 80 to 548 plus 02.79, Yakima Proj., Kennewick Div., Spec. DC 3840, WASHINGTON. Bureau Reclamation, Dpt. Interior, Kennewick, Wash. Bids Dec. 17. CD 11/11.

▲† **Baldwin-Lima-Hamilton Corp.**, 940 Simpson St., Eddystone 42, Pa., CA, $19,996,770, 14-turbines The Dalles Dam, Wasco Co., CIVENG 35-026-53-53, OREGON. U. S. Eng., Pittock Block, Portland, Ore., Bids Dec. 2 CD 12/5, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

B. J. Ukropina, T. P. Polich, Steve Kral & John R. Ukropina, Box 105, San Gabriel, Calif., LB, $2,476,702, road construction 2.1 mi., 5 bridges, etc. Santa Ana Freeway between Pioneer Blvd. and 0.3 mi., s.e. of Rosecrans Ave., Los Angeles Co. Bids Dec. 18. CD 11/26.

▲† **Stolte, Inc.**, 8451 San Leandro St., Oakland, Calif., LB, $1,885,954, high HP conventional recip. engine test facilities, McClellan Air Force Base, 53-1, SACRAMENTO, CALIF. Dir. of Procurement, Sacramento Air Material Area, McClellan Air Force Base, Sacramento, Calif. Bids Dec. 16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Biltwell Constr. Co.**, 4745 Geary St., San Francisco, Calif., LB, $1,577,777, Potrero Annex HOUSING, CAL 1-10, SAN FRANCISCO, CALIF. San Francisco Housing Auth., 440 Turk St., San Francisco, Calif. Bids Dec. 16. CD 11/20.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ONTARIO**—Dpt. Highways, Parliament Bldgs., Toronto

Klimack Constr. Ltd., Swastika, Ont., CA, $1,200,000, grading, structures 12 mi. Hy. 11 Smooth Rock to Strickland, Cochrane; Contr. 52-112;

Ellins Constr. Co. Ltd., 304 Scarlett Rd., Toronto, Ont. CA, $700,000, 4.75 mi. Hy. 11 north from Elmsdale near Huntsville, Contr. 52-108;

Peacock & McQuigge Ltd., 1109 Millwood Rd., Leaside, Toronto, Ont., CA, $1,000,000 12.6 mi. dual hy. near London Contr. 52-97;

Dibblee Constr. Co. Ltd., 248 Albert St., Ottawa, Ont., CA, $350,000, grading structures 8 mi. easterly Plantagenet Contr. 52-106;

K. J. Beamish Constr. Co. Ltd., 2460 Dufferin St., Toronto, Ont., CA, $1,000,000 4.5 mi. Toronto Bypass Highway Markham Rd. to Hy. 2 A, Toronto, Contr. 52-102;

Standard Paving Ltd. Harbor Commission Bldg., Toronto, Ont., CA, $1,250,000, 3 mi. Toronto By-pass Hy. Richview Rd. south to Bloor St. 4 bridges, Toronto, Contr. 52-103. Grand Total $5,500,000. Bids Dec. 12 awarded Dec. 22. CD 12/3.

▲ **B. Perini & Son (Canada) Ltd.** 2975A Bloor St. W., Toronto, Ont., CA, $3,500,000, aircraft hangar and concrete hangar apron and site services MALTON, ONT. Trans-Canada Airlines International Aviation Bldg. Montreal, Que. Bids Dec. 1, awarded Dec. 22. CD 11/20.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh, Pa., CA, $10,000,000, COKE OVENS expansion at steel mill SAULT STE. MARIE, ONT. Algoma Steel Corp., Ltd., Wilde St., Sault Ste. Marie, Ont. Awarded Dec. 19.

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and Shops
PHOENIXVILLE, PA.

Subsidiary—Barium Steel Corporation

Awards end year on strong note; contracts 9% above December, 1951

For the ninth consecutive month, heavy construction awards in December, 1952, ran ahead of the corresponding period in 1951.

Contract awards, as reported by ENGINEERING NEWS-RECORD and the CONSTRUCTION DAILY, totaled $929 million in December, 9% above December, 1951.

Because of the sustained drive, 1952 contract volume wound up the year 15% ahead of 1951, with a new record of $15.7 billion in awards.

Commercial building was one of these. Contract awards for commercial building in December totaled $131 million. This was close to the 1952 high of $147 million, set in November, and was more than five times the contract volume for December, 1951.

Private mass housing rolled up $219 million in December contracts, 44% more than in December, 1951.

Both public and private unclassified construction moved at a fast rate. Public unclassified work, consisting mostly of airport and other military and naval construction, had $68 million in awards for December. Private unclassified construction, consisting primarily of pipelines and transmission lines, registered $51 million, for the highest month since January, 1952.

• **South sets record**—In '52 contractors in the South had the biggest year on record in heavy construction business. Contract volume for all of 1952 hit $3.7 billion in the South, a jump of 35% over 1951. The figure set a new record for dollar volume of contracts awarded in one year in any single section of the country.

Key factor in the South's record was the vast atomic energy program. Contracts for new work at Oak Ridge, Tenn., and Paducah, Ky., alone totaled more than $900 million. It was the second year that the South had led in heavy construction contracts. The first time—1950—was also due to AEC work. That time, the Savannah River Project was a major contributor.

• **Midwest booms**—Heavy construction business boomed in the Middle West in 1952. Contract volume topped $3.4 billion for the year. That was a big 44% gain over 1951. The $1.2-billion Portsmouth, Ohio, atomic energy plant pushed the region into second place in total contract volume.

Contract volume in the Middle Atlantic States hit $2.6 billion for all of 1952, for a 3% increase over 1951. States west of the Mississippi reported a total of $3.4 billion new contracts, 2% more than in '51.

New England's construction volume in 1952 held about even with 1951. Awards totaled $600 million for the year.

Volume in the Far West went down 3% from 1951; awards amounted to $1.9 billion.

Construction costs continue stable

Construction costs continue relatively stable this month, with the construction cost index down fractionally and the building cost index up a little.

ENGINEERING NEWS-RECORD's construction cost index for January is 587.29 (1913 equals 100). This is down 0.03% from December, 1952.

Lower lumber prices are responsible for the small dip. Common labor rates are unchanged in all of the 20 cities.

ENGINEERING NEWS-RECORD's building cost index is 425.04, an increase of 0.02% from December, 1952.

Skilled labor wage boosts outweigh a slight decline in lumber prices.

Mixed changes in fir lumber prices in six cities average out to a 0.6% decline in the 20-cities average for fir 2x4s. The average price of pine 2x4s moves up 0.2% with only three cities reporting any price change.

• **Wage hikes**—On the wage front, bricklayers and carpenters in New Orleans won a 10-cent raise, pushing the rate for bricklayers to $2.95 per hour, and for carpenters, to $2.32 per hour.

In Los Angeles, structural ironworkers received a 7-cent increase to $2.77 per hour. But they are negotiating for a further increase of 8 cents, plus 7.5 cents per hour for a welfare fund.

ENGINEERING CONSTRUCTION CONTRACTS—DECEMBER, 1952

ENGINEERING NEWS-RECORD reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000

Four Weeks—Thousands of Dollars (000 Omitted)

	December, 1952							U. S. Cumulative—Twelve Months		% Change	Canada December
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1952	1951	'51 to '52	1952
Public Works											
Waterworks	113	692	4,077	14,492	4,090	1,187	24,651	231,058	208,813	+11	1,978
Sewerage	199	553	1,566	11,837	7,369	3,102	24,626	304,372	335,089	− 9	2,260
Bridges	520	7,605	4,222	208	2,283	3,449	18,287	395,211	304,155	+30	90
Earthwork and drainage	113	878	9,816	1,229	16,443	14,004	42,483	495,908	504,517	− 2	2,228
Streets and roads	882	4,261	17,628	10,355	10,705	6,883	50,714	1,396,532	1,166,988	+20	1,501
Public buildings, residential	1,567	2,504	12,171	12,869	988	661	30,760	606,272	644,222	− 6	2,650
Other public buildings	2,503	23,137	25,589	16,015	26,521	23,769	117,534	4,292,575	2,057,276	+109	10,251
Unclassified	1,476	8,257	26,091	1,355	24,308	6,204	67,691	854,698	946,136	−10	4,850
Total public	**7,373**	**47,887**	**101,160**	**68,360**	**92,707**	**59,259**	**376,746**	**8,576,626**	**6,167,196**	**+39**	**25,808**
Federal government (included in above classifications)	1,695	8,871	40,926	3,223	48,711	26,857	130,283	4,501,049	2,245,805	+100	9,550
Private											
Bridges	.....	.....	2,270	.....	.....	.....	2,270	17,989	11,790	+53	.....
Industrial buildings	3,551	13,012	39,119	32,474	31,193	6,665	126,014	2,722,369	4,123,526	−34	12,175
Com'l buildings, residential	11,209	74,499	38,670	51,507	22,154	21,185	219,224	3,001,941	2,032,180	+48	12,924
Other commercial buildings	4,369	63,700	8,232	30,160	23,413	1,683	131,557	843,519	599,859	+41	3,725
Unclassified	10,100	500	6,220	685	16,525	17,135	51,165	526,800	670,812	−21	580
Total private	**29,229**	**151,711**	**94,511**	**114,826**	**93,285**	**46,668**	**530,230**	**7,112,618**	**7,438,167**	**− 4**	**29,404**
Total Engineering Construction:											
December, 1952—4 weeks	**36,602**	**199,598**	**195,671**	**183,186**	**185,992**	**105,927**	**906,976**	.....	.....	.....	**55,212**
November, 1952—4 weeks	37,910	259,631	200,719	181,354	193,557	206,708	1,079,879	.....	.....	.....	70,351
December, 1951—4 weeks	39,715	180,367	146,579	148,413	192,149	121,950	829,173	.....	.....	.....	60,358
Twelve Months—1952	**623,577**	**2,645,399**	**3,721,671**	**3,437,626**	**3,405,865**	**1,855,906**	.....	**15,689,244**	.....	**+15**	**1,182,456**
Twelve Months—1951	623,935	2,576,996	2,760,429	2,381,588	3,350,509	1,911,106	.....	.....	13,605,363	.....	1,162,637
% Change '51 to '52	−0.1	+3	+35	+44	+2	−3	.....	.....	.....	.....	+2

Legal delays cloud Bay Bridge work

Delaying tactics now open to opponents of a major bridge across the northern arm of San Francisco Bay last week cast a definite shadow over prospects for construction.

Involved is construction of the Richmond-San Rafael Bridge, for which construction bids were taken Dec. 19, and $62 million worth of revenue bonds sold (ENR Jan. 1, p. 23).

Opponents actually lost the first round of their battle against the bridge, when a Sonoma County Superior Court refused to grant an injunction to halt the bond sale. But the court granted Robert Fraser, attorney for the North Bay Barrier Assn., 60 days in which to file an appeal—which he promised to do.

And because the sale of the bonds and the award of construction contracts are so closely tied, those in favor of building the bridge believed that by delaying his appeal to near the end of the court-allowed time limit, Fraser might block construction effectively.

• **Reason for fear**—There was good reason for this fear, even though the California Toll Bridge Authority (which would build and own the bridge) officially was not concerned.

It centered around a stipulation made by a banking group (headed by Blyth and Co.) which had purchased the authority's $62-million bond issue. The bankers agreed to purchase the bonds (at a 3⅞% interest rate) with the stipulation that construction contracts must be awarded before the bonds are accepted.

Accordingly, the authority took bids Dec. 19 on substructure and superstructure, for a total of roughly $36 million.

But the award of the contracts could be held up pending a clear legal green light for the financing arrangements. The authority may wait 60 days from the date of receiving bids before awarding contracts—and contractors can take another eight days beyond that to accept. Thus a delay to the full 60 days in the court appeal could hamper the award and the financing arrangements seriously.

Authority engineers had hoped to get work started on the 4-mi bridge this month, and complete it in about three years.

• **What's at issue**—Although opponents chose to fight on a legal question of validity of the bond issue, what's at stake is a long-standing argument over proper communications across San Francisco Bay and proper use of waters in the bay.

One faction—of which the North Bay Barrier Assn. is a leading part—has advocated construction of earth barriers across both northern and southern arms of the bay, converting the ends of the bay into two large fresh-water lakes (known as the Reber plan, see ENR Nov. 24, 1949, p. 29).

These barriers would also serve as causeways over which both highway and rail transport could move, provide enormously expanded docking facilities, and provide—say advocates—huge quantities of fresh industrial water for development of area industry.

A joint Navy-Army Engineering Board and others have dismissed these proposals as impracticable, pointing to the elaborate lock system that would be necessary to get ships to bay ports, as well as to expensive sewerage disposal works that would be necessary and other matters—as reasons.

The Toll Bridge Authority—officially impartial—has favored bridge construction, rather than barriers.

• **Toll bridge financing**—West Virginia's State Road Commission has announced plans to build a $2.6-million toll bridge across the Kanawha River at Winfield under a rarely used provision of federal law.

Under the Oldfield Act of 1927, the state will pay half the cost with the expectation of getting the money back in tolls.

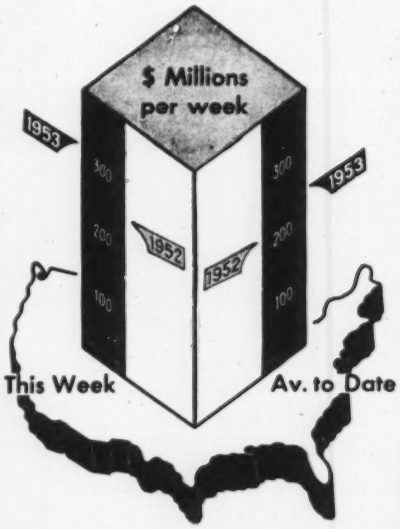
The federal government will pay the other half as it normally does on federal-aid projects. Once the state is paid off, the bridge becomes free. Preliminary borings and location surveys have been made.

The Washington State Toll Bridge Authority, provided that it receives approval of an $82-million crossing of Puget Sound west of Seattle, will consider three proposals for financing, as offered by a board of consulting engineers.

Two of the proposals call for an $82-million bond issue, their difference being in the time of retirement. One calls for retirement of the bonds in 14 years, with initial toll about the same as present ferry fares, the tolls to be reduced an estimated 30% in the ninth year. This proposal is based on an expected revenue of $8 million in the first year. The other proposal calls for an 18-year retirement period, which would permit initial tolls to be 24% under ferryboat rates.

Activity This Week

As reported to ENR (in millions of dollars)



Contracts by type of work

	This Week	Cumulative 2 wks 1953	1952	% chge
Waterworks	$3.7	$8.4	$17.2	−51
Sewerage	7.3	11.3	9.7	+16
Bridges	15.9	18.4	7.7	+139
Highways	18.5	54.9	48.5	+13
Earthwork, waterways	28.5	30.8	17.9	+72
Buildings:				
Public	54.3	78.5	65.8	+19
Housg., pub.	29.0	41.0	43.2	+27
Housg., priv.	61.4	114.0	53.5	+113
Commercial	21.9	31.3	9.4	+233
Industrial	30.5	50.6	137.0	−63
Unclassified	52.7	69.5	26.9	+158
Total	**$323.7**	**$508.7**	**$425.8**	**+19**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Jan.	587.27	282.30	123.11
	Dec.	587.49	282.41	123.16
Bldg. cost.	Jan.	425.04	229.76	120.82
	Dec.	424.92*	229.70*	120.79*
Volume	Dec.	421	171	122

* Revised

The third proposal calls for a $90-million issue to be retired over an 18-year period, with initial tolls 17.8% below ferryboat charges. Under both the second and third proposals, tolls would be reduced 20% in the tenth year of operation.

The schedule of tolls would have to be fixed by investment houses which would buy the revenue bonds financing the proposed crossing. The authority expects to file an application with the Corps of Army Engineers early in January for a permit to bridge the sound via Vashon Island.

Teague investigation brings convictions

The Teague committee hearings in San Diego several months ago have had multiple repercussions. A total of 23 persons have been indicted and several have been convicted as a result of a federal grand jury probe into operations of the Veterans Administration insured home-loan program.

On Dec. 20 John Newman Haskell, Jr., former vice-president of the Southern California Mortgage & Loan Corporation, pleaded guilty to a reduced charge of making false statements to the VA in connection with a claim for GI benefits. He was ordered to pay a fine of $1,000. The plea came three days in advance of the date he was scheduled to go to trial on a grand jury charge that he falsified the credit rating of a veteran to put through VA insurance of a home loan. This indictment was dismissed when Haskell pleaded guilty to the lesser charge.

In another development, Roy E. Hegg retired Dec. 24 as president of the San Diego Federal Savings & Loan Assn., but retained his position as chairman of the board. Hegg is scheduled to go to trial later to answer an accusation that San Diego Federal issued GI loans on condition that builders purchase fire insurance for the homes with Hegg's insurance agency. Two former vice-presidents of this savings and loan association, Wrelton L. Clarke and Alton B. Jackson, have pleaded guilty or have been convicted of various charges growing out of the grand jury probe.

The indictment charging Kenneth A. Glazenbrook, general manager of Mobilhoms Corp. of San Diego, with bribing Francis G. Paige, former assistant chief of the VA loan guaranty office in San Diego, has been dismissed. Assistant U. S. Attorney Morris Sankary stated that new evidence obtained by the FBI showed that Glazenbrook was not involved.

Paige has been serving a 3½-year sentence in a federal prison and has been ordered to pay a $5,000 fine after pleading guilty to several charges and failing to contest others.

Contractor files suit for payment of "extras"

Seeking reimbursement for "extras," a Cincinnati contractor has filed a $513,785-suit against the Montgomery County Commissioners, at Dayton, Ohio, charging a breach of contract.

W. L. Harper Co., the contractor, filed the suit as work neared completion on a $954,000-section of the Beavercreek District sewer system.

In the suit, Harper charged that the commissioners permitted another contractor to build water lines in the same area before the sewer system was installed, contrary to terms of the contract and entailing extra work for Harper. For this, Harper is demanding payment of $104,387.95.

Harper also charged that (1) the commissioners authorized numerous changes which cost the company almost $60,000; (2) that it cost the company another $250,000 because the commissioners, through their agents, misrepresented ownership of the property in which the sewer system was to be laid; (3) that the county made test borings and said the soil condition was dry, when, in reality, it contained large quantities of water. For the latter, Harper is seeking payment of $100,000.

Controversy over the added expenses has flared since October. In November, the county commissioners approved payment of $37,203 to Harper for "unanticipated expenses."

Highway revenues top $5 billion in 1951

Federal, state and municipal governmental units received more than $5 billion for highway purposes in 1951, the Bureau of Public Roads reported last week. The total was up 9% over 1950, and was the first time receipts had passed the $5-billion mark for one year.

Corresponding total disbursements amounted to $4,878 million, including $337 million for debt retirement.

The state governments continued to lead in receipts. Highway use taxes last year brought the state government $2,483 million. Toll receipts added $93 million to the state coffers and another $84 million was derived from miscellanous sources.

Urban areas received $620 million in property tax and miscellaneous taxes, and $34 million in toll receipts.

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Service contract paves way for $22.5-million sewer

Three New Jersey municipalities have accepted a Middlesex County Sewerage Authority service contract. The action assures an early start on construction of a $22.5-million sewer from Bound Brook to Raritan Bay, 20 mi distant, (ENR Dec. 18, p. 44).

The authority will send ordinances to municipalities that have accepted the service contract. When these ordinances are passed, the authority will issue $1 million in short-term revenue bonds to complete engineering work on the sewer. After that bids will be asked for construction of the sewer and 40-year revenue bonds will be issued to pay for it.

The three cities, North Plainfield, Plainfield and Dunellen, gave the authority the 90% participation required to assure start of the project.

CAA to spend $21.5 million for Wake Island housing

The Civil Aeronautics Administration has diverted $21.5 million from other projects to begin building permanent typhoon-proof dwellings on Wake Island.

Since the Sept. 15 typhoon, which flattened most of the Quonset huts in which personnel were living, CAA employees have been quartered in tents and improvised shacks. After the disaster, families of the employees were moved to Hawaii.

Business briefs . . .

• **Bell-ringer**—American Telephone & Telegraph Co., the nation's largest utility, added up its construction expenditures for 1952, found that they came to more than $1.5 billion, including an unspecified amount for defense construction.

• **Municipal financing**—With almost all of the figures in, it became apparent that municipal financing in 1952 would total more than $4 billion, for a new record. Previous high: $3.7 billion, in 1950.

• **Corporate financing**—While cities, counties, and states were setting a new record for financing, private industry went after some records of its own. The Securities & Exchange Commission reported that $7.2 billion in corporate securities were offered in the first nine months of the year, with the volume continuing at a high level in the fourth quarter. Of the $7.2-billion total for the first nine months of 1952, industry spent $4.9 billion for plant and equipment, SEC said.

OFFICIAL PROPOSALS

Bids: January 29, 1953

Settling Basins and Chemical Building Foundation

NORTHEAST STATION
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN
CONTRACT NO. NE-5

Sealed proposals for the construction of the Settling Basins and Chemical Building Foundation for the Northeast Station, at 11000 East Eight Mile Road, will be received by the Board of Water Commissioners of the City of Detroit. Proposals shall be addressed to the Board of Water Commissioners, City of Detroit, Room 506 Water Board Building, 735 Randolph Street, Detroit 26, Michigan, and shall be endorsed "Proposal for Contract No. NE-5". Proposals will be received until 10:00 A.M., Eastern Standard Time, January 29, 1953, at which time they will be opened and read aloud in the Board Room, Fifth Floor, Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

Included in the work is the construction of a reinforced concrete Settling Basins structure, approximately 469 feet by 516 feet in plan and 25 feet in depth; reinforced concrete foundation slab for the Chemical Building, approximately 63 feet by 186 feet in plan; reinforced concrete conduits, chambers and wells; and various drain lines with appurtenances. The Settling Basins are to bear directly on the soil, and the Chemical Building foundation slab is to be constructed on cast-in-place concrete end-bearing piles, the base lengths of which are established as 120 linear feet with the total number required in excess of 500. Excavation work included in the Contract will be to a level approximately 8 feet below existing grade. The walls of the Settling Basins are to be faced with brick above finished grade. The work also includes the furnishing and installation of flocculation equipment, flushing pumps, sluice gates, miscellaneous piping systems, electrical work, and all necessary appurtenances.

The Contract Documents, including the Notice to Bidders, the Forms of Proposal and Agreement, the Specifications, and the Contract Drawings may be examined during business hours, at the office of the Department of Water Supply, Room 706 Water Board Building, Detroit, Michigan. The Contract Documents may be obtained by making a deposit of Fifty Dollars ($50.00) per set, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty (30) days after the bid date, or if used in making a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract.

No proposal may be withdrawn for at least sixty (60) days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept any bid, or to reject any or all bids, should it deem it to be in the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
Oscar Wagner, President
George A. Shaffer, Vice-President
Alfred J. Simpson
Harvey A. Wagner
L. G. Lenhardt, Superintendent, General Manager and Chief Engineer
E. H. Bauer, Acting Secretary

More Official Proposals on Pages 105, 106 & 107

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. SEND ALL ADVERTISEMENTS TO CLASSIFIED ADVERTISING DIVISION, 29TH FLOOR, McGRAW-HILL PUB. CO., INC., 330 W. 42 ST., N. Y. 36, N. Y.

Bids: February 5, 1953

Re-Advertisement for Water Pumping Plant

LOW LIFT STRUCTURE
NORTHEAST STATION
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN
CONTRACT NO. NE-3

Sealed proposals for the construction of the Low Lift Structure for the Northeast Station, at 11000 East Eight Mile Road, will be received by the Board of Water Commissioners of the city of Detroit. Proposals shall be addressed to the Board of Water Commissioners, City of Detroit, Room 506 Water Building, 735 Randolph Street, Detroit 26, Michigan, and shall be endorsed "Proposal for Contract No. NE-3". Proposals will be received until 10:00 A.M. Eastern Standard Time, February 5, 1953, at which time they will be opened and read aloud in the Board Room, Fifth Floor, Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

Included in the work is the completion of the construction of the substructure and the construction of the complete superstructure of the Low Lift Plant of the Northeast Station within and upon an existing foundation which was constructed as an open caisson. The existing caisson is of reinforced concrete construction, circular in plan, 94 feet in outside diameter with walls 8 feet thick, is approximately 110 feet in depth below Elevation 130 and rests on material classified as hardpan. The work within the existing caisson portion and in the complete substructure includes the construction of heavy reinforced concrete pump suction and discharge flumes, surge flumes, collecting channels, and fireproof structural steel framing with concrete and steel grating floors. The superstructure is to be constructed circular in plan with an outside diameter of 104 feet (approximate), with a height of 55 feet (approximate), finished grade to top of coping, with structural steel rigid frames, reinforced concrete roof, masonry walls with limestone and granite facing and ceramic tile interior finish. The work also includes the furnishing and installation of a 20 ton bridge crane, an hydraulic hoist, passenger elevator, lighting, heating, ventilating, plumbing, sluice gates, miscellaneous large and small piping systems, large pump suction and discharge castings and fittings, some 54-inch diameter water main, and the installation of gate valves. The main pumping units and dewatering pumps will be furnished and installed under other contracts.

The Contract Documents, including the Notice to Bidders, the Forms of Proposal and Agreement, the Specifications, and the Contract Drawings may be examined during busines hours, at the office of the Department of Water Supply, Room 706 Water Board Building, Detroit, Michigan. The Contract Documents may be obtained by making a deposit of Seventy-Five Dollars ($75.00) per set, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty (30) days after the bid date, or if used in making a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract.

No proposal may be withdrawn for at least sixty (60) days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept any bid, or to reject any or all bids, should it deem it to be in the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
Oscar Wagner, President
George A. Shaffer, Vice President
Alfred J. Simpson
R. K. Williams
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer, Acting Secretary

Bids: February 19, 1953

State University Medical Center Basic Sciences Building Kinks— County—New York

NOTICE TO BIDDERS

Separate sealed proposals covering Construction; Heating, Ventilating and Air Conditioning; Sanitary; and Electric Work; Electric Elevators and Dumbwaiters; Moving Stairways; and Mechanical Refrigeration Work; State University Medical Center, Kings County, N. Y., in accordance with Specifications Nos. 17206, 17207, 17208, 17209, 17210, 17210A and 17211 and accompanying drawings, will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the State University, until 2:00 o'clock P.M., Eastern Standard Time, on Thursday, February 19, 1953, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check made payable to the State of New York, Commissioner of Taxation and Finance, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract, and a separate bond for the payment of laborers and materialmen as follows: On contracts not more than $500,000.00, 100% of the amount of the contract; on contracts in excess of $500,000.00 and not more than $1,000,000.00, 50% of the amount of the contract; on contracts in excess of $1,000,000.00 and not more than $5,000,000.00, 40% of the amount of the contract; on a contract in excess of $5,000,000.00, the bond shall be in the amount of $2,500,000.00. Corporations submitting proposals shall be authorized to do business in the State of New York. Drawings and specifications may be examined free of charge at the following offices:

State Architect, 270 Broadway, New York City.
State Architect, The Gov. A. E. Smith State Office Bldg., Albany, N. Y.
District Engineer, 109 N. Genesee St., Utica, N. Y.
District Engineer, 301 E. Water St., Syracuse, N. Y.
District Engineer, Barge Canal Terminal, Rochester, N. Y.
District Engineer, 65 Court St., Buffalo, N. Y.
District Engineer, 30 West Main St., Hornell, N. Y.
District Engineer, 444 Van Duzee St., Watertown, N. Y.
District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
District Engineer, 71 Frederick St., Binghamton, N. Y.
District Engineer, Babylon, Long Island, N. Y.

Drawings and specifications may be obtained by calling at the office of the State Architect, The Gov. A. E. Smith State Office Bldg., Albany, N. Y., and making deposit for each set as follows: Construction, $30.00; Heating, Ventilating and Air Conditioning, $30.00; Sanitary, $30.00; Electric, $30.00; Elevators and Dumbwaiters, $30.00; Moving Stairways, $30.00; Refrigeration, $5.00; or by mailing such deposit to the Bureau of Contracts and Accounts, Dept. of Public Works, The Gov. A. E. Smith State Office Bldg., Albany, N. Y. Checks shall be made payable to the Department of Public Works. Proposal blanks and envelopes will be furnished without charge.

DATED: 12/19/52

Bids: January 20, 1953

Electrical Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ELECTRICAL WORK—ROUTE 26 EXT., SEC. 2-F

Electrical Work, Highway Lighting and Signs, on Route 26 Ext., Section 2-F, from Perry Street to Strawberry Street including the Trenton Circle, in the Township of Lawrence and City of Trenton, Mercer County. The principal items of construction are

Estimated
11,350 lin. ft. Trenching & Backfill
22,230 lin. ft. Primary Cable, 7500 Volts
11,950 lin. ft. Directional Sign Dable
22—Acrylic Face Signs
6—Channel Letter Neon Signs
60—Lighting Standards
1,420 lin. ft. Wrought Iron Conduits

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 20, 1953, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME) and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000, and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: January 22, 1953

Construction and Installation of West Garbage Incinerator New York International Airport

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M-174
PROPOSAL NO. 999

Sealed proposals for the construction and installation of a Wet Garbage Incinerator in the West Boiler Room, New York International Airport, Jamaica, N. Y., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111-8th Ave., New York 11, until 11:00 A.M., Thursday, January 22, 1953, at which time and place said proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK
AUTHORITY
Howard S. Cullman, Chairman

OFFICIAL PROPOSALS

Bids: January 23, 1953

Route 25A, Sections 3A and 1K

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 25A, Sections 3A and 1K, from D. L. & W. R.R. to High Street, Paving, Bridges and Retaining Walls, City of Newark, Essex County. Federal Project No. AU-187(7). Length 0.574 miles. The principal items of construction are: Estimated:

Roadway Items

88,657 cu. yds. Roadway Excav.-Earth
15,219 cu. yds. Roadway Excav.-Rock
17,165 sq. yds. Conc. Pavement Surface
3,728 sq. yds. Waterbound Macadam Base
947 tons Bituminous Conc. Surface
202 lin. ft. 72" Rein. Conc. Culvert Pipe
40 Inlets and Manholes
14,842 lin. ft. White Conc. Curb
1,594 cu. ft. Conc. Cribbing

Electrical Items

5,985 lin. ft. 3" Galvanized W. I. Pipe Conduits

Bridge Items

7,535 cu. yds. Conc. in Structures
214,820 lbs. Rein. Steel in Structures
653,400 lbs. Structural Steel
L.S.—Lighting System

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Friday, January 23, 1953, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by N. J. State Employment Service, 309 Washington Street, Newark, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

OFFICIAL PROPOSALS

Bids: February 2, 1953

New Castle Avenue Interchange Lighting

THE DELAWARE MEMORIAL BRIDGE
NOTICE TO BIDDERS
CONTRACT No. 26

Sealed proposals for furnishing and installing New Castle Avenue Interchange Lighting for the Delaware Memorial Bridge will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Field Office, Delaware Memorial Bridge, Delaware, until 12 o'clock noon Eastern Standard Time, February 2, 1953, at which time and place said proposals will be opened and read.

The work involves the following principal quantities:

Trenching and Backfilling	7,900 lin. ft.
Underground Metal Conduit	700 lin. ft.
No. 4/0 A.W.G. Lighting Conductor	2,600 lin. ft.
No. 4 A.W.G. Lighting Conductor	15,500 lin. ft.
Light Standards	46

Work on Contract No. 26 shall begin promptly after the execution of the Contract and shall be completed on or before July 1, 1953.

Monthly payment will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check to the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the contract documents may be obtained from the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. after January 10, 1953, upon payment of $10.00. Contract documents need not be returned to the Engineers and the above payment will not be refunded.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, and at the office of the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. For information as to the location of the Director's office, inquiry should be made at the Administration Building, Toll Plaza, Delaware Memorial Bridge.

State Highway Department
by: J. H. Tyler, McConnell, Chairman
W. A. McWilliams, Director
Delaware Crossing Division
January 8, 1953

Bids: January 27, 1953

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

PALISADES INTERSTATE PARKWAY, Palisades Interstate Parkway, N. J., Section 2-G, from Fort Lee Bridge Plaza to Bayview Avenue, Sta. 9+98 to Sta. 45+50, Grading, in the Boroughs of Fort Lee and Englewood Cliffs, Bergen County. Length 0.673 mile. The principal items of construction are:

Estimated
3,619 cu. yds. Roadway Excav.—Earth
19,065 cu. yds. Roadway Excav.—Rock
49,338 cu. yds. Borrow Excav.
3,424 lin. ft. Rein. Conc. Culvert Pipe

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 27, 1953, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

OFFICIAL PROPOSALS

Bids: January 22, 1953

Installation of Sprinklers New York International Airport, Jamaica, N. Y.

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M-168
PROPOSAL NO. 1000

Sealed proposals for furnishing all labor, material and equipment to install sprinklers in Hangars Nos. 3, 4 and 5 at New York International Airport, Jamaica, N. Y., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111-8th Ave., New York 11, until 11:00 A.M., Thursday, January 22, 1953, at which time said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

U. S. Government

DEPARTMENT OF THE INTERIOR. Bureau of Reclamation. Sealed bids (Specifications No. DC-3865) will be received at Friant, California, until 10:00 a.m., January 27, 1953, for furnishing labor and material for earthwork and structures, lateral and sublaterals, North Section, Unit No. 3, Part 1, Madera Distribution System (Central Valley Project, California. Location: About 8 miles northwest of Madera, California. Principal items are: 285,000 cu. yds. of excavation for laterals and structures; placing 46,000 cu. yds. of earth lining; 1,070 cu. yds. of concrete in structures; and other work. Completion time 150 days. For particulars, address Bureau of Reclamation, Friant, California; or Building 53, Denver Federal Center, Colorado.

MICHAEL W. STRAUS, Commissioner

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3864) will be received by Bureau of Reclamation, Denver, Colorado, until February 10, 1953, and then publicly opened for furnishing and installing three (3) 6,315-kva, 95-percent power factor, 105.9-rpm, 4,160-volt, 3-phase, 60-cycle, vertical-shaft, alternating-current, open-type, air cooled generators; complete with protective equipment for Little Porcupine Power Plant, Missouri River Basin, Montana. Time allowed for completion will be 930 to 1,050 days. For particulars, address Construction Engineer, Bureau of Reclamation, Fort Peck, Montana; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: January 6, 1953

Notice to Bidders Contracts C-46, C-46-A, and C-46-B

Sealed proposals will be received by the Ohio Turnpike Commission for the performance of Contracts C-46, C-46-A, and C-46-B, covering, respectively, the whole and separate portions of twin bridges over the Maumee River, in Lucas and Wood Counties, Ohio. Each bidder may bid on the substructure alone, Contract C-46-A; or on the superstructure alone, Contract C-46-B; or on both the substructure and superstructure, Contract C-46; or on Contract C-46 together with either or both of Contracts C-46-A and C-46-B.

The work covered by Contract C-46-A consists generally of the construction of the substructure for the aforesaid twin bridges. Substructure units for each bridge are the west abutments, nine river piers, one land pier, and the east abutments.

Approximate quantities of the major items of materials for Contract C-46-A are as follows:

3,400 Cu. Yds. Dry and Wet Excavation
3,400 Ft. Steel Piles
9,800 Cu. Yds. Class "E" Concrete for Structures
725,000 Lbs. Reinforcing Steel
460,000 Lbs. Low Alloy Steel Protection Plates

The work covered by Contract C-46-B consists generally of the construction of the superstructure for the aforesaid twin bridges, total length 1934 feet c-c of bearings of abutments, each bridge consisting of eleven simple deck-beam or girder spans (1 @ 90'; 3 @ 145'; 2 @ 126.5'; 3 @ 145'; 1 @ 91' and 1 @ 90').

Approximate quantities of the major items of materials for Contract C-46-B are as follows:

3,300 Cu. Yds. Class "C" Concrete for Structures
959,000 Lbs. Reinforcing Steel
969,000 Lbs. Structural Steel in Beam Spans
5,792,000 Lbs. Structural Steel in Girder Spans
5,824 Ft. Railing

The work covered by Contract C-46 is the combination of the construction as above generally described for Contracts C-46-A and C-46-B.

Copies of the Plans and General Specifications for said Contracts are immediately available for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 361 East Broad Street, Columbus 15, Ohio. These documents may be purchased from said Chief Engineer for the following sums per set, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1 ..... $5.00
Plans for substructures of Maumee River Bridges $1.25
Plans for superstructures thereof ... $2.50

Forms or copies of Proposals for each of Contracts C-46, C-46-A, and C-46-B; of the Affidavit which must accompany any such proposal; of this Notice to Bidders; of the Special Provisions applying to said contracts; of the Contracts to be entered into with the (or each) successful bidder; and of the Contract Bond to be furnished with such contract will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office, on and after January 6, 1953. One set (or, if requested, a reasonable additional number) of said documents will be furnished without charge to each purchaser of either of the aforesaid sets of Plans.

All proposals must be on the forms prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each proposal must be accompanied by a certified check on a solvent bank, payable to the order of the Ohio Turnpike Commission, in an amount not less than 5% of the total amount bid. If a bidder bids on Contract C-46 and also on either or both of Contracts C-46-A and C-46-B, one certified check will suffice, if in an amount not less than 5% of the total amount bid by him on Contract C-46. If a bidder bids on both of Contracts C-46-A and C-46-B, but not on Contract C-46, he shall submit separate certified checks with each bid. The Commission may at any time cash any such check. Each such check, or the proceeds thereof, will be held by the Commission as a guaranty that, if any proposal guaranteed thereby is accepted, a contract will be entered into and the performance of the proposal secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications; provided, that if there be a forfeiture, it shall be of an amount equal to 5% of the total amount bid in the proposal with respect to which the forfeiture occurs, and any excess thereover will be returned to the bidder.

All bids must be received at or before 10:00 A. M., Eastern Standard Time, January 21, 1953, in the offices of the Ohio Turnpike Commission, 361 East Broad Street, Columbus 15, Ohio. At said hour, the bid box will be removed to the Neil House Hotel, 41 South High Street, Columbus, Ohio, where all proposals will be publicly opened and read.

If the bid of the lowest and best bidder for Contract C-46 is lower and better than the bids, taken together, of the lowest and best bidders for Contracts C-46-A and C-46-B, respectively, Contract C-46 will be awarded (if any award be made) to said lowest and best bidder for it, and no award will be made of Contracts C-46-A and C-46-B. If the converse be true, no award will be made of Contract C-46 and Contracts C-46-A and C-46-B will be awarded to the lowest and best bidders for them, respectively; or, since the Commission reserves the right to reject any or all proposals, it may award either Contract C-46-A or Contract C-46-B to the lowest and best bidder therefor, and make no other award, or it may make no award of any of the contracts. To qualify for award, a bidder's proposal must comply with the prescribed requirements.

The Commission reserves the right to waive technicalities.

OHIO TURNPIKE COMMISSION
December 23, 1952

Bids: January 22, 1953

Construction of Sanitary Sewers, Manholes and Miscellaneous Appurtenances

Sealed proposals for furnishing all labor and materials for the construction of approximately 36,020 lineal feet of 8", 10", 12" and 15" sanitary sewers, manholes and miscellaneous appurtenances, to be constructed in the Township of Abington, Montgomery County, Pennsylvania, will be received by the Secretary of the Commissioners of the Township pf Abington, at the Township Office, 1176 Old York Road, Abington, Pennsylvania, up to 7:30 o'clock p.m., Eastern Standard Time, and will be publicly opened at 8:00 o'clock p.m., Eastern Standard Time on THURSDAY, JANUARY 22, 1953.

The work will be divided into three contracts designated as:

CONTRACT NO. 31: Branch and intercepting sewers in the Noble and Rydal Areas, Abington Township, Wards No. 1, 2 and 7, consisting of approximately 31,240 lineal feet of 8", 10" 12" and 15" sanitary sewers.

CONTRACT NO. 33: Branch sewers in the Glenside Gardens Area, Abington Township, Ward No. 11, consisting of approximately 2,980 lineal feet of 8" sanitary sewers.

CONTRACT NO. 34: Branch sewers in the McKinley Area, Abington Township, Ward No. 4, consisting of approximately 1,800 lineal feet of 8" sanitary sewers.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the Township Office or at the office of Albright & Friel Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania, and copies thereof may be obtained at either office, upon a deposit of FIFTEEN DOLLARS ($15.00) for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set of each contract will be returned to each actual bidder and other deposits will be refunded with a deduction of SEVEN DOLLARS AND FIFTY CENTS ($7.50) for each set of each contract returned to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A Certified Check or Bid Bond drawn to the order of the Township of Abington, equal to five per cent (5%) of the amount of bid for each contract must be submitted with the proposals.

Contractors may submit bids on any or all contracts.

The proposal must be sealed and marked "SEALED PROPOSALS FOR CONSTRUCTION OF SANITARY SEWERS—CONTRACT NO. 31 and/or 33 and/ 34", addressed to the Commissioners of the Township of Abington, c/o Mr. E. Raymond Ambler, Secretary.

The Board reserves the right to reject any and/or all bids.

No bid may be withdrawn within thirty (30) days after the actual date of the opening thereof.

E. RAYMOND AMBLER, Secretary
January 1, 1953

OFFICIAL PROPOSALS

Bids: January 20, 1953

Routes 25, 38 and 45, Airport Circle Improvement

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Routes 25, 38 & 45, Airport Circle Improvement, in the Township of Pennsauken, Camden County, Federal Project No. U-69(17). Length 0.736 mile. The principal items of construction are: Estimated:

Roadway Items

6,368 cu. yds. Roadway Excavation
41,607 cu. yds. Wet Excavation
179,493 cu. yds. Borrow Excavation
8,914 sq. yds. 8" Macadam Base
1,483 tons Bituminous Concrete Surface
8,934 sq. yds. 10" Rein. Conc. Pavement
842 lin. ft. Rein. Conc. Culvert Pipe
886 lin. ft. Cast Iron Culvert Pipe
520 lin. ft. 7" Corr. Metal Culvert Pipe
15,540 lin. ft. White Concrete Curb
6 Electrical Sign Installations

Bridge Items

2,765 cu. yds. Concrete in Structures
187,675 lbs. Rein. Steel in Structures
466,500 lbs. Structural Steel
3,420 lin. ft. Steel Piles
2,640 lin. ft. Untreated Timber Piles
3,420 lin. ft. Treated Timber Piles

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 20, 1953, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the N. J. State Employment Service, 910 Broadway, Camden, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

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(Continued from page 110)

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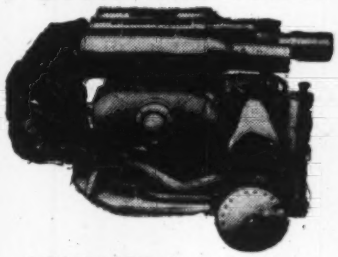

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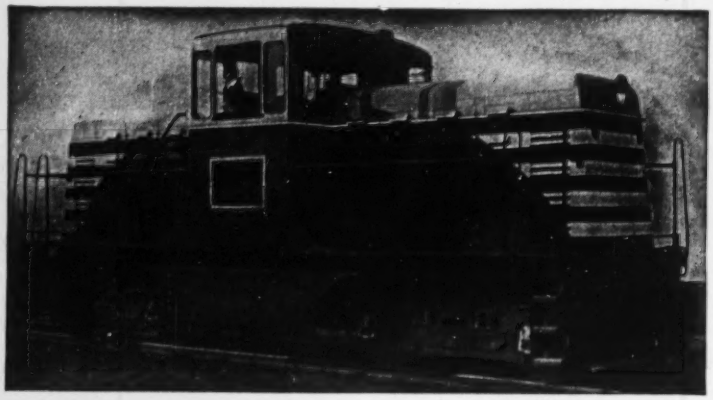

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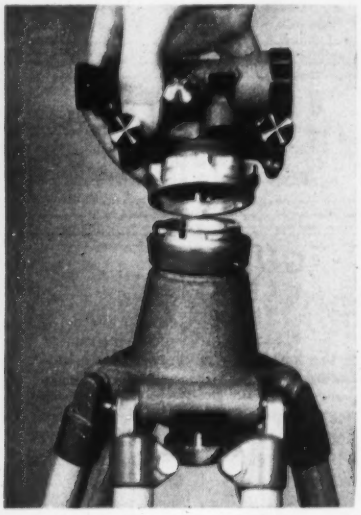
SUPERINTENDENT peers through his new Kern GK-1 level to check grades on swimming pool job in Bedford, N. Y. Contractor is E. L. Wagner Co., Inc., Darien, Conn. Features of level include, left to right, fine tilting screw, focussing knob,



bulls-eye level and horizontal tangent screw. At bottom is clamp for ball-and-socket joint that replaces footscrews.

Swiss optical level has no footscrews

THERE ARE NO footscrews on the Kern GK-1 level; they've been replaced on the Swiss optical surveying instrument by a ball-and-socket head. This head, in combination with a bulls-eye level, permits leveling up in seconds.

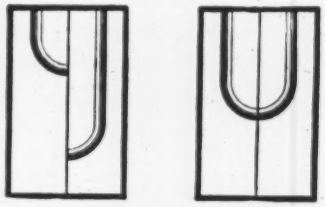
The idea of ball joints for survey instruments is not a new one—they were tried years ago in Europe but met with little or no success since they were found to lack stability. This situation has now been corrected on the Kern instruments by use of a quick-coupling device (photo above, right) designed to assure a tight connection with a twist of the wrist, making the instrument and its tripod a rigid whole.

• Spirit level bubble reflected—Several other features are built into the instruments to increase working speed and insure greater accuracy. One of these is the combination of a fine tilting screw and the spirit level. Coincidence prisms provide a parallax-free image of the corresponding halves of each end of the bubble (see below), so arranged that the halves combine to form a semicircle when the instrument is level. Bubble ends are viewed through a 2-power lens and the telescope's line of sight can be leveled to within one second.

• Stadia lines for distances—As on most American models, the telescope glass has stadia lines for distance readings. That portion of the rod cut off by these lines, read in decimals of a foot, will give the distance from the instrument to rod, expressed in feet.

• Horizontal circle is optional—The GK-1 has a counterpart in the GK-1C, which has a horizontal circle 2¾ in. in diameter and divided into 360 deg. It can be set to a zero reading at any point, with degree markings readable through a magnifying glass direct to ⅓ and estimated to 1/.20 of a degree.

• Crosshairs are etched—Instead of being diamond-cut, crosshairs on Kern reticles are etched with hydrofluoric acid for high precision, synonymous with Swiss products. Although the 4⅛-in. telescope is sealed, some microscopically fine dust particles might penetrate and settle on the reticle where they would be enlarged along with the crosshair. Kern makes its reticles from two pieces of optically flat glass. Crosshairs are etched on one side of one glass, then sandwiched and sealed in between the two. Thus if some dust should penetrate the sealed telescope, it would never be in focus.



VIEW THROUGH 2-power lens near eyepiece shows reflected ends of level bubble. Fine tilting screw is adjusted, bringing them together to form semicircle; then the instrument is level.

• Hard coating on lenses—All air-to-glass surfaces are hard-coated by a factory-developed process which protects exposed lenses and also provides 40% more brilliance. The carrying case measures only 3 x 5 x 4 in. If the instrument is not firmly locked in place, the cover cannot close; on the other hand, once the cover is fastened, the instrument cannot come loose.

• Well established in Europe—The Kern instruments are not newcomers. The company has 115 agents in 80 countries. Recently it held a celebration on the occasion of the 1,000th instrument sale in France since the end of the war.

The company has arranged to bring to the U. S. personnel and machinery for proper servicing of its instruments. It has shipped to this country the same high-precision toolmaker's equipment as that used to manufacture the original instruments; complete with all milling attachments and special drilling tools.

Kern's headquarters in the U. S. is the KERN SURVEYING INSTRUMENT DIVISION, PAUL REINHART CO., INC., 68 BEAVER STREET, NEW YORK 4, NEW YORK.

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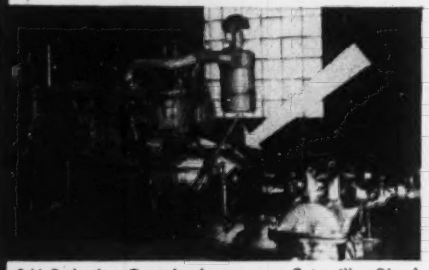

S-N Reduction Gear is shown on a Caterpillar Diesel (78 H.P. at 1600 r.p.m.) in this municipal pumping station.

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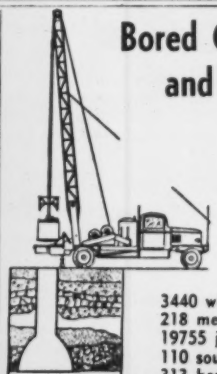

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313 kentucky ave. • paducah, ky. • 2-3366

Spark plug inspection tool has flashlight, magnifier

A welcome addition to any mechanic's tool kit is a new inspection tool, designed for close examination of automotive spark plug firing ends, and marketed by Champion Spark Plug Co.

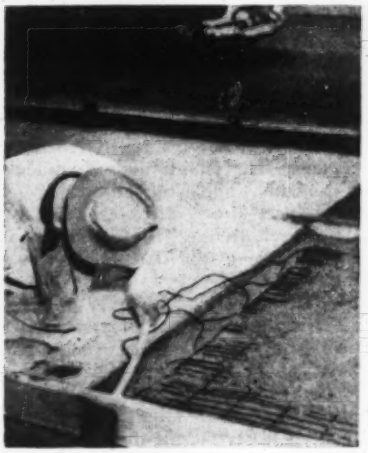
Combining a flashlight and magnifying glass of 2½-power, the viewer permits critical examination of fuel deposits for the entire length of the insulator nose. In addition it reveals incomplete or uneven abrasive cleaning, detects cracked or chipped insulators, checks condition of electrode sparking surfaces and points out need for replacement of spark plugs.

The 1½-in. diameter magnifying glass is mounted in a plastic housing combined with a standard two-cell flashlight into a single unit. The hole in the bottom of the housing, accepting the plug to be inspected, is shielded to cut out excessive natural light. The position of the bulb permits light of high intensity to be directed into the bore of the spark plug shell without any light getting into the eye of the user. CHAMPION SPARK PLUG COMPANY, TOLEDO, OHIO.

Electric heating cable will melt snow from sidewalks

One of the largest snow-melting installations using the new Thermwire electric heating cable was recently completed at the new John T. Ryan Memorial Laboratory of Mine Safety Appliances Company in Pittsburgh.

Seventy-two standard Thermwire sets of 800 watts each were embedded in 1,440 sq ft of concrete sidewalk along two sides of the building. With an installed capacity of 57.6 kilowatts, a heat intensity of 40 watts per square foot was obtained. This is sufficient to



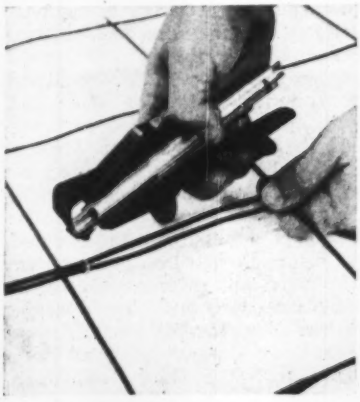
melt the heaviest expected snowfall as fast as it comes down.

As shown in the photo below, standard 160-ft cable lengths were fastened to 5x20-ft sections of 6x6 commercial mesh with hog-ring staples. All but the top inch of concrete sidewalk was then poured and the 5x20-ft sections of mesh were laid on top of this pour. The final inch was poured on top of the combination mesh and Thermwire immediately after the cold lead wires had been run through conduit pipe to junction box (photo above).

According to the manufacturer the operating cost is estimated at about $50 a year, based on an average Pittsburgh winter. With the mere flip of a switch, Thermwire can be energized to keep the sidewalk dry from the beginning of a snowstorm to the end.

This is the latest application of the heating wire which has been used in the past on other winter applications such as pipeline heating, snow and ice removal from roof gutters, downspouts, etc. Edwin L. Wiegand Company, 7500 Thomas Boulevard, Pittsburgh 8, Pennsylvania.

(*New Products cont'd on next page*)



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- for installation in LIMITED SPACE
- for DUST-PROOF operation

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Dimensions: Dia. 23"; Hgt. 28"
For remodeling applications send for Bulletin SE-870

A one horsepower unit handles waste from 20 residences

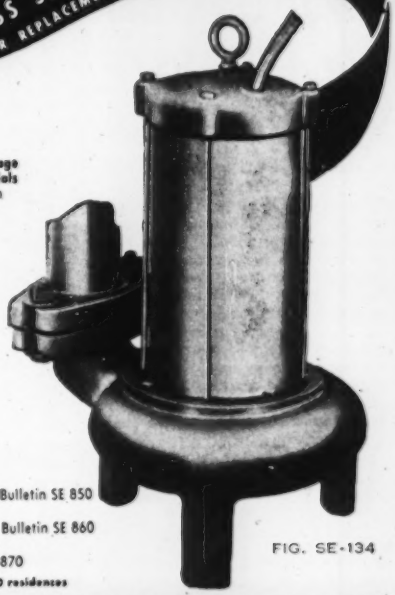

FIG. SE-134

weil PUMP CO. 1530 NORTH FREMONT ST. • CHICAGO 22

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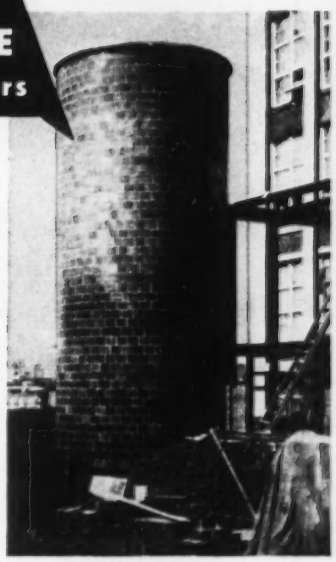

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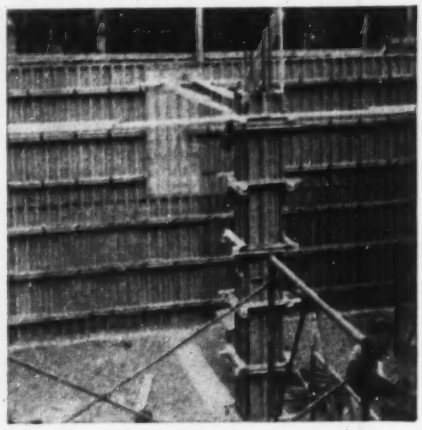

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MORE YARDS . . . with a

SAUERMAN POWER SCRAPER

Picture above shows how a 2 cu. yd. Sauerman Power Scraper with a 500 ft. operating span is used by the Nevada Silica Sands, Inc., to mine sandstone. Because the material will not cave, the digging path of the scraper must be changed frequently, so the tail end is arranged for automatic rapid shifting. A third drum on the 75 h.p. Sauerman scraper hoist controls the shifting.

A smaller Sauerman scraper is used at the company's processing plant to reclaim sand from storage and load into cars.

One easily trained operator can use the Sauerman Scraper to reach out hundreds of feet and move a big yardage of sand, gravel or any bulk material. Power use is slight, too, and maintenance is simple. Total cost is but a few cents per cubic yard handled. Gas, electric or Diesel.

Investigate the efficient and economical Sauerman machines today. Write for 24-page catalog containing engineering data showing how to cut material handling costs!

SAUERMAN BROS., INC.
532 S. CLINTON ST. CHICAGO 7, ILL.

Trailer is mobile home for transient construction men

Trotwood Trailers, Inc., has announced new trailer coaches designed to provide comfortable mobile homes for construction workers.

They are 31 ft long and available in two styles. They will provide sleeping accommodations for four or six persons. The length of both models is the same. The extra bedroom of the six-sleeper uses space gained by slightly shortening the living room and replacing the bathtub with a shower.

A large living room table provides ideal work surface for blueprints and plans and, when not in use, table sections can be stored in a closet. The 12-foot living room is completely furnished with a long sofa, modern chairs, plastic cone-shaped lights, venetian blinds, drapes, inlaid linoleum floor, and a large wall mirror.

Behind the living room is a compact U-shaped kitchen with an apartment-size gas range, double-bowl sink, work surfaces covered with Formica, and several overhead cupboards. Opposite the sink is a 6-cu ft refrigerator between two large closets, one for wardrobe and the other for brooms, etc.

Two other wardrobes are accessible from the bedroom. An electric water heater is concealed beneath the sink.

In the four-sleeper model the bathroom is located behind the kitchen. Both models have complete sanitary facilities. TROTWOOD TRAILERS, INC., TROTWOOD, OHIO.

Selector chart chooses proper anchoring devices

The holding power of expansion shields varies in accordance with the type and quality of masonry, depth of hole, length and size of bolts or screw, and proper installation. To aid workmen, the U. S. Expansion Bolt Co. offers selector charts which classifies each of the company's anchoring devices according to load type, masonry classification, safe working load and metal table.

Four load types are considered: dead, variable, vibrating and shock load. Safe working loads are specified for each product from ¼ in. to 1 in. and the selector determines the proper size and number of anchoring devices to be used, depending upon weight of the object to be anchored. All figures are based on pull-out tests. The metal table gives material specifications of steel, malleable iron, zinc or lead alloy. UNITED STATES EXPANSION BOLT COMPANY, YORK, PENNSYLVANIA.

PUBLICATIONS

Small Vertical Pumps—Construction features of A-C small vertical pumps for sidewall or submerged mounting are described in this 8-page bulletin. Motor frame, speed, horsepower and current characteristics can be determined from a series of curve tables. The back page has tables on water friction in pipes and resistance of fittings to flow of fluids. The bulletin is numbered 52B6975A and is available from ALLIS-CHALMERS MANUFACTURING CO., 840 SOUTH 70TH STREET, MILWAUKEE, WISCONSIN.

Masonite Hardboards—This 24-page book is a guide for the application and finishing of Masonite Hardboards as they are used in remodeling and in building construction. Included are sections on physical properties, bending, fastening, finishing, wainscoting, underlayments, lap siding, panel siding and concrete form work.

The back page contains a list of technical bulletins available from the company as well as a complete list of branch offices in major cities of the U. S. and foreign countries. MASONITE CORPORATION, 111 W. WASHINGTON STREET, CHICAGO 2, ILLINOIS.

What is Telemetering?—That's the title of a four-page folder which not only defines the word but adds several applications of Telemetering systems and tells what such systems can do for you. It's actually a copy of the company's house organ "The Autocon Rambler" (Vol 4, No. 2) but it's a special edition and should be of interest, especially to those concerned with water supply, treatment, distribution, storage, etc. AUTOMATIC CONTROL CO., 1005 UNIVERSITY AVE., SAINT PAUL 4, MINNESOTA.

Torque Manual—Years of experience with torque wrenches and torque problems have been compressed into a 28-page booklet by the P. A. Sturtevant Co. to aid anyone responsible for torque control specifications and applications. It is especially helpful to those in the building and construction industry who design or build bolted steel structures, vessels, etc.

Starting with basic laws, nomenclature and formulae for torque, the booklet continues through various beam problems, torque multipliers, calculations, rigid and pivoted handles and finally a full-page Torque Specification Chart. The booklet is priced at $1.00 and is available from P. A. STURTEVANT CO., ADDISON, ILLINOIS.

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EDITORIALS

New Year of promise—and work

THAT ARTIFICIAL MILEPOST which civilization has erected in obeisance to the calendar was passed last week with the usual mingling of hopes and fears. Yet the hopes seem to have more buoyancy and the fears less of pessimism than for many New Years past.

Inescapably, this attitude of optimism must be traced to the recent elections, with their promise of release from government restrictions and of a return to more reliance on individual enterprise and initiative. The danger is that there will grow up a belief that optimism amid a new political and economic atmosphere will produce miracles of progress by itself. Actually, of course (in the very best of worlds), productivity results only from work. So while 1953 is a year of great promise, every American should include among his New Year's resolutions one that says, "I will exercise my individual enterprise to the limit." Under such an impetus, promises have a way of coming true.

First Look

ONE OF THE PRINCIPAL PROMISES of General Eisenhower in the election campaign was to re-examine the military program for waste, duplication and unnecessary expenditures. A harbinger of the "first look" appeared last week in the person of Senator Leverett Saltonstall, the incoming chairman of the Senate Armed Services Committee, who asked that all funds for military base construction be held up until they could be reviewed by the new administration. A logical move, its outcome will be of great interest to the construction industry, particularly as respects the methods and philosophy followed.

Not too many months ago, a congressional committee investigating the Moroccan airbases showed how not to conduct such studies by calling all manner of critical witnesses in a public hearing before allowing the responsible heads of the Defense Department or the contractors to answer the committee's charges. A fine crop of headlines and unnecessary damage to reputations resulted, unaccompanied by any useful economies.

Just recently, too, a subcommittee of the House Committee on Expenditures in the Executive Department took a look at the whole military construction program, with the conclusion that there were too many "plush features" in the facilities being built. And it was disconcerting to read that it thought that folding plastic partitions in classrooms, terrazo floors in the entrance foyers of airbase operations buildings and tile wainscoting in the lavatories were examples of plush and therefore wasteful design. It may well be that expenditures for such details represent the wisest possible use of taxpayer money when maintenance charges are taken into account. There was criticism also of hospital facilities as bordering on the deluxe level, which may or may not be justified when the reasons therefor are known.

There is no thought here that Congress should not keep the pressure on the military to follow sensible and economical design and construction procedures. The basic point is that investigations should not be undertaken with the idea of compiling a list of charges, but rather of raising questions and getting answers from the responsible people in charge before conclusions are drawn.

President-elect Eisenhower is on record as saying that savings can be made on the military program. It is encouraging to see steps being taken to ascertain where and how those savings can be made. But it is to be hoped that investigations will not be begun with the idea that the only reason for things being as they are is incompetence, or reckless design and construction. One thing that the new broom of the incoming administration can sweep out is this kind of investigational philosophy. This first new look at the military construction program is a good place to start.

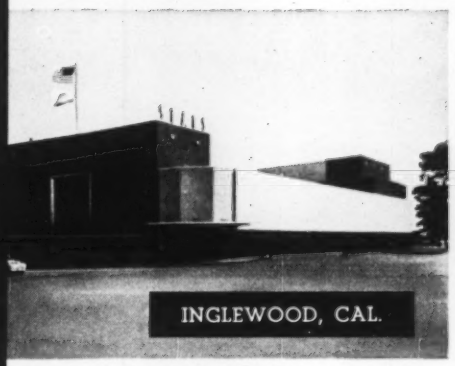
Unifying flood control

THE PROPOSAL to center responsibility for all flood-control planning and construction in the Corps of Engineers and to limit the Department of Agriculture's related activities to erosion control, which was made recently by the House Subcommittee on Civil Work (ENR Dec. 18, p. 21) is sound and should be put into effect soon. The subcommittee says that the Department of Agriculture's Soil Conservation Service has been inching its way into the flood-control field as part of the erosion-control and flow-retardation program.

No one doubts the need for more erosion control and for greater effort in the direction of retarding runoff, both as a means for reducing the total runoff and for putting more water into the subsoil. Nor is there any doubt but that flood planning should take into consideration the reductions in runoff that are possible under a proper land-use program to the end that required storage capacity may be reduced to the greatest extent possible.

But no amount of upstream retardation work will prevent floods. All it can do is reduce the total runoff. Consequently, flood-control planning for any river system of considerable size cannot be effective unless it includes storage reservoirs of large capacity, and, generally, channel improvement and flood walls or levees along the lower reaches of the river. These can best be handled by the Army Engineers, along with their other river work.

RAYMOND SERVES SEARS ROEBUCK



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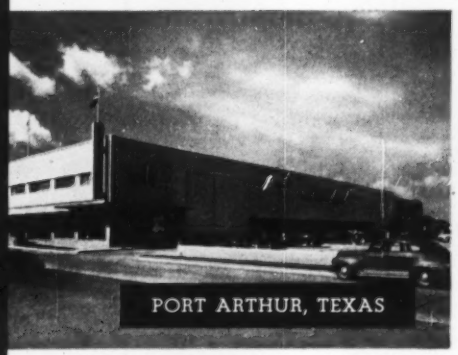
Sears Roebuck & Company continues to turn to Raymond for their foundation work . . . Sixteen different Sears stores (seven shown here) in ten States rest on Raymond piles . . . These repeat performances are further evidence that leading industrial organizations consistently utilize Raymond services for their important projects.



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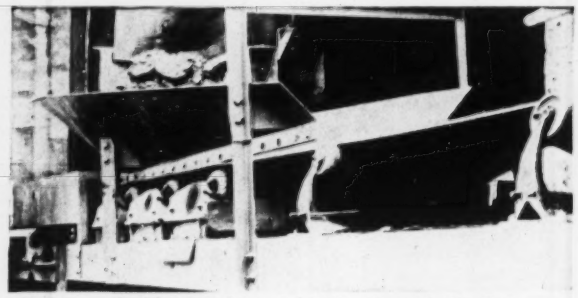
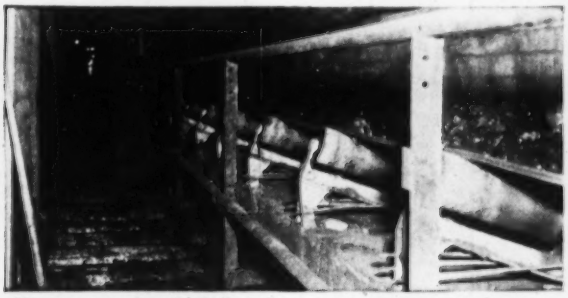
IT'S TIMKEN... AND TIMKEN...

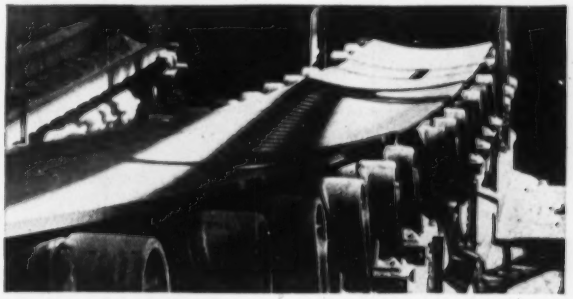


Refuse rock rides 324 feet on this Continental Gin Company conveyor at a mine in Alabama. Rugged Timken bearings in the idlers have given trouble-free service through the years of operation.



Here's a 900-foot Link-Belt Company installation in Pennsylvania, carrying 550 tons of coal per hour to a cleaning plant. Timken bearings reduce friction, assure long idler life, reduce belt wear.

AND TIMKEN AGAIN!



This Timken bearing equipped Stephens-Adamson conveyor in a South American copper mine handled 90-million tons of ore during an 11-year period. Speed is 600 feet per minute. Load is 4800 tons per hour.

AND HERE ARE 6 BIG REASONS WHY:

1 **THOROUGHLY PROVED.** The Timken® bearing is the only tapered roller bearing proved by 15 years or more of service in heavy-duty conveyor installations using the popular dead shaft construction.

2 **EXTRA CAPACITY.** Line contact between rollers and races gives Timken bearings high load capacity. And by using Timken bearing sizes that are mass produced for the automotive industry, you get extra capacity bearings that actually cost *less* than the smaller sizes you'd normally use.

3 **LONG-LIFE LUBRICATION.** Not just lubricated for "life" but lubricated yearly, or as conditions require, to insure *long* life. Fresh lubricant ends any chance of gummy, sticky, jammed bearings.

4 **LONGER ROLLER AND BELT LIFE.** Less sliding and scuffing between idlers and belt.

5 **FRICTION MINIMIZED.** Timken bearings' true rolling motion and extremely smooth surface finish practically eliminate friction.

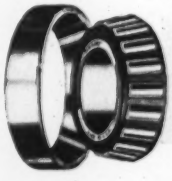
6 **MAINTENANCE REDUCED.** Long life and dependable performance of Timken tapered roller bearings cut maintenance to a minimum.

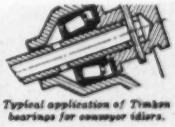
Remember "Timken" is not a bearing type. It is a trademark applying only to bearings made by The Timken Roller Bearing Company. Always insist on Timken bearings in the conveyors you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Wherever the going's tough industry turns to

TIMKEN

TAPERED ROLLER BEARINGS





Typical application of Timken bearings for conveyor idlers.

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◫ AND THRUST ◫ LOADS OR ANY COMBINATION ✳